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Leveraging Advanced Analytics to Understand the Impact of the COVID-19 Pandemic on Trends in Substance Use Disorders

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Abstract

Coronavirus disease (COVID-19) caused an overwhelming healthcare, economic, social, and psychological impact on the world during 2020 and first part of 2021. Certain populations, especially those with Substance Use Disorders (SUD), were particularly vulnerable to contract the virus and also likely to suffer from a greater psychosocial and psychological burden. COVID-19 and addiction are two conditions on the verge of a collision, potentially causing a major public health threat. There is surge of addictive behaviors (both new and relapse), including use of alcohol, nicotine, and recreational drugs. This book chapter analyzed the bi-directional relationship between COVID-19 and SUD by leveraging descriptive summaries, advanced analytics, and machine learning approaches. The data sources included healthcare claims dataset as well as state level alcohol consumption to help in investigating the bi-directional relationship between the two conditions. Results suggest that alcohol and nicotine use increased during the pandemic and that the profile of SUD patients included diagnoses and symptoms of COVID-19, depression and anxiety, as well as hypertensive conditions.

Keywords: COVID-19, pandemic, addiction, smoking, alcohol, opioid addiction, public health, advanced analytics, linear regression, machine learning model

1. Introduction

The coronavirus disease (COVID-19) has caused a large healthcare, economic, and psychosocial impact on communities in the United States and around the world in 2020 and first part of 2021. Many communities, especially those with low income and Substance Use Disorders (SUD), were particularly vulnerable to contract the infection and likely to suffered from a greater economic and psychosocial burden [1].

Addiction, characterized by a range of mental, physical, and behavioral symptoms, claims the lives of millions of people every year around the world [2]. In their National Survey on Drug Use and Health, Substance Abuse and Mental Health Services Administration estimated that 22.6 million Americans, 12 years of age or older (9.2% of the population), have SUD, including alcohol and tobacco use [3]. Furthermore, the long-term treatment has challenges to due frequent relapse [4]. Alcohol consumption and drug addiction cost around 1.5% of the global burden of disease, and it can be as high as 5% in some countries, according to recent data [2].

There are two basic settings to treat SUD: inpatient and outpatient. The primary goal is for patients affected by addiction to be in the most effective, yet least restrictive environment that allows them to move along a continuum of care, depending on their personal and medical needs. There are four phases of SUD care: outpatient treatment, intensive outpatient treatment, residential treatment, and inpatient hospitalization [5].

Furthermore, SUD treatment programs are often designed based on three basic models:

- Psychological model that includes behavioral therapy and treats emotional challenges as the primary cause of SUD.
- Medical model that requires treatment of SUD symptoms by a healthcare provider. It focuses on the physiological, biological, and genetic causes of the disease.
- Sociocultural model that aims to modify the physical and social environment of a person with SUD [5].

Many patients, receiving SUD treatments, may have also problems in other areas of their life, including but not limited to: physical and mental health issues, relationship problems, inadequate social and work skills, as well as legal or financial challenges. As a result, the treatment options should aim to address the entire spectrum of issues, and not only treat the addiction component [5].

Even with the variety of treatment options for SUD, more than 6,000 people a month died from overdosing before the pandemic started in the US [6]. In addition to the continued loss of lives due to addiction, the pandemic also added other challenges for those suffering from SUD, resulting in additional 2,000 individuals a month dying from SUD between March and August 2020 [6]. The government COVID-19 based restrictions, like home confinement, caused enormous economic burden to communities in the US as well as around the world. Individuals and their families faced various unwelcome emotional, psychological, and behavioral challenges, including excessive substance abuse and depression [4], which further increased the risk for addiction. The COVID-19 related restrictions caused individuals to turn to smoking, alcohol, drugs, including opioids and synthetic drugs like Fentanyl, as well as gaming activities to deal with the COVID-19 pandemic [6–8].

On the other hand, individuals suffering from addiction were often also part of low income communities that already faced many significant challenges related to access to healthcare, quality education, and unemployment. They also were also more prone to contract infection during the COVID-19 pandemic due to their underlying comorbid conditions and immune system deficiencies [8, 9].

In this book chapter, the bi-directional correlation between the COVID-19 diagnoses and SUD was investigated, and insights were provided to better understand the impact of the pandemic on addiction occurrence. The research leveraged multiple analytics methods from descriptive statistics, through a simple linear regression, and selected machine learning models to analyze this relationship. The data sources utilized for the analysis included healthcare claims dataset and the state level alcohol consumption.

2. Literature review

The COVID-19 pandemic caused limited social interactions for individuals around the world due to the strict national, state, and local governmental

restrictions [10, 11]. As a result of the restrictions, many individuals started using tobacco, alcohol, and other substances to help with stress related symptoms. On the other hand, the increased restrictions and home confinement reduced the substance exposure, but also resulted in more pronounced cravings and withdrawal effects in current users. Selected articles have cited a substantially increased number of drug – and alcohol – withdrawal cases and hospitalizations, which were potentially putting burden on the already strained health care systems [12, 13].

Opioid addiction and its management was often discussed SUD type in the COVID-19 era. Opioid addicts particularly faced a challenge due to difficulty in accessing healthcare services, imposed restrictions on prescription and over-the-counter drugs, closures of rehabilitation centers, and an increased risk of life-threatening withdrawals [14]. While loosening of restrictions were recommended for home-based self-injections and long-acting formulations of methadone and buprenorphine to mitigate these problems, there was also fear of overdosing and fatalities [15, 16].

Due to the financial burden and an uncertain future as a result of the pandemic, gambling activities also increased to unprecedented levels [17, 18]. Eating disorders and compulsive buying were progressively being reported [19, 20]. COVID-19 pandemic created a vicious cycle of stress, depression, social isolation, anxiety, excess leisure time that led to surge of behavioral addictions, resulting in mood alterations, irritability, anxiety, and stress [19, 20].

3. Data and methodology overview

There were multiple types of data utilized for this research. The first source of the data is represented by the healthcare claims database with the study time period from January 31, 2019 to December 31, 2020. Patient cohorts: study target and control were established, using SUD and COVID-19 ICD 10 diagnosis codes. The diagnoses codes are listed in the appendix. The healthcare claims dataset included diagnosis codes, medical and surgical codes, therapeutics and treatments prescribed at the transactional level. In addition, socioeconomic variables, including age, gender, race, education and incomes levels were leveraged to provide additional insights into the characteristics of patients with SUD during COVID-19 pandemic [21].

The second dataset employed for the study represented the State Level Alcohol Consumption trends for 2019 and 2020. The 2020 data was available, however, only through end of September. For this analysis, alcohol consumption data on per capita, alcohol sales from 19 states (Alaska, Arkansas, Colorado, Connecticut, Delaware, Florida, Illinois, Kansas, Kentucky, Louisiana, Massachusetts, Missouri, North Dakota, Oregon, Tennessee, Texas, Utah, Virginia, and Wisconsin) by type of alcoholic beverage was leveraged. Only information from the states noted above was used due to limited availability of data from other states [22].

A number of analytical methods was employed for the analysis from the rules-based patient qualification criteria, descriptive statistics, linear regression analysis to machine learning algorithms in order to understand the bi-directional relationship between SUD trends and the COVID-19 surge.

3.1 Healthcare claims patient level database

The healthcare claims database is an anonymous longitudinal patient data set that can help researchers, healthcare providers, and pharmaceutical companies in the design of research studies in order to aid comparisons of diagnosis and

treatment outcomes that represent individual patient-based experiences and interactions with the US healthcare system [21].

The healthcare claims database leveraged for this study consisted of medical, hospital, and prescription claims across all insurance payment types. As shown in **Figure 1**, the database covers more than 317 million patients in the US, spans over more than 17 years of medical health history, and includes more than 1.9 million healthcare providers [21]. The data elements used for the study included diagnoses codes for SUD and other comorbid conditions, procedures and treatments, payment types: commercial, Medicaid, Medicare and cash, along with patient sociodemographic characteristics like age, gender, race, education and income levels, as well as geography [21].

3.2 Methodology overview: Linear regression introduction

One of the methods utilized to analyze the relationship between addiction and the COVID-19 pandemic was a linear regression approach. In statistics, linear regression is a linear method to modeling the relationship between a scalar response (dependent variable – y) and one or more explanatory variables (independent variables – x):

$$y = f(x) \tag{1}$$

When there is only one explanatory variable, the regression is called a simple linear regression. When there are more than one independent variables, the process is called a multiple linear regression [23].

In a linear regression, the relationships are modeled using linear predictor functions, whose model parameters are estimated from the data [24]. Linear regression focuses on the conditional probability distribution of the response given the values of the predictors, which is the domain of multivariate analysis [24].

There are several metrics often leveraged to evaluate the model performance: R-squared and F-statistic. R-squared also called the coefficient of determination is the proportion of the variance in the dependent variable that can be explained by the variation in the independent variable(s). The value of the metric ranges between 0 and 1, and the higher value represents a better performance of the model [24]. An F-test represents a statistical test often used when comparing statistical models employed on the studied datasets to identify the model that best fits the population from which the data sample was drawn [24].

Figure 1.
Healthcare claims patient level database description.

3.3 Machine learning introduction

Machine learning is a subfield of the artificial intelligence area, which includes statistics, mathematics, computer algorithms, etc. focused on building applications that learn and improve their predictive capabilities automatically over time without being specifically programmed to do so. Machine learning models are built upon a statistical framework, since they involve data elements often described, using statistical distributions and assumptions. These algorithms gained in popularity in the recent years due the increased amounts of data availability and significant advancements in the computing power [25].

In this book chapter, selected algorithms were leveraged to analyze the relationship between SUD and COVID-19 diagnoses. The analysis identified factors beyond the pandemic, such as patient characteristics: age, race, education and income levels, comorbid conditions (example: diabetes, hypertension, mental health), concomitant treatments that increased the addiction diagnoses, including patients most likely to struggle with SUD, regions of greater prevalence, and comorbid conditions presented along with SUD and COVID-19 diagnoses.

3.3.1 Supervised learning algorithms

Supervised learning is the process of training or building machine learning algorithms, in which algorithms learn to map from input space (X) to output space (Y) [26].

$$Y = f(X) \quad (2)$$

The major objective is to approximate the mapping function (f) in order to predict (y) outcome when a new data point (x) is added [26]. Supervised learning algorithms are mainly used for classification and prediction problems [27]. The following are examples of supervised algorithms: logistic regression, decision trees (DTs), random forest (RF), extreme gradient boosting (XGBoost), support vector machines (SVMs), naïve bayes, adaptive boosting (AdaBoost), and artificial neural network (ANN) [28].

3.3.2 Unsupervised learning algorithms

Unsupervised learning algorithms, on the other hand, learn the hidden patterns within the input dataset (X) [29]. These models are called unsupervised, because there is no supervision to guide them, and the algorithms learn, discover, and display the patterns in the input data (X) [30]. These algorithms are often employed to uncover the natural clusters, dimension reduction, anomaly detection, etc. Examples of unsupervised algorithms include: k-means clustering, principal component analysis (PCA), factor analysis (FA), singular value decomposition (SVD), apriori algorithm (association rule) [28].

Depending on the study objectives and the available data type, algorithms are tested for performance, data type fit, and are selected accordingly. A random forest and an extreme gradient boosting models were selected to explain the bi-directional relationships of the SUD trends and COVID-19 pandemic surge.

3.3.3 xExtreme gradient boosting

Gradient boosting algorithm is an ensemble of weak prediction models, mostly decision trees [31]. XGBoost starts by creating a first simple tree [32, 33], which

than adds other trees, and builds upon the weaker learners. The model learns with each iteration and revises the previous tree until an optimal point is reached [34].

Feature importance is the value mostly generated by tree-based models like decision trees, random forest, XGBoost, etc. [31] and signifies the importance of features in the model in predicting the outcome. It represents how good the feature is at reducing node impurity. It is widely known as 'gini importance' or 'mean decrease impurity,' and is defined as the total decrease in node impurity averaged over all trees of the ensemble [32]. Importance is mostly calculated as: weight, gain and cover, where 'weight' is the number of times a feature is present in a tree, 'gain' is the average gain of splits, while 'cover' is the average coverage of splits, with 'coverage' being defined as the number of samples affected by the split [33].

3.3.4 Random forest

Random forest or random decision forest is an ensemble learning method for classification and regression analysis that constructs an array of decision trees during the training timeframe. The output of the random forest for the classification task is the class selected by the majority of trees, while for the regression task, the output represents the mean or average prediction across individual trees [35, 36].

3.3.5 Chi-square test and p-value

The Chi-square test is one of the most widely used non-parametric tests [37], often utilized to test the independence between observed and expected frequencies of one or more attributes in a contingency table, known as 'goodness of fit test' [38].

The p-value, also used in this study, evaluates the statistical significance of the predictor variables. The significance level was set at the 5% and 10% to aid the feature importance evaluation and statistical results' interpretation [24, 38].

3.3.6 Classification metrics

The following classification metrics were leveraged to validate the machine learning models' performance. A confusion matrix is often generated from the predicted probability values with 0.5 as the classification threshold. Patients with probability value greater than or equal to 0.5 are noted as 1 and below 0.5 are noted as 0 [38].

Confusion matrix:

- True Positive (TP) – Target patient correctly identified by the model as target patient
- False Positive (FP) – Control patient misclassified by the model as target patient
- True Negative (TN) – Control patient correctly classified by the model as control patient
- False Negative (FN) – Target patient misclassified by the model as control patient

Model performance metrics:

- Accuracy: % of total patients correctly identified among total patients

- Positive Predictive Value (PPV, Precision): % of true target patients among total predicted target patients
- True Positive Rate (TPR, Sensitivity, Recall, Hit Rate): % of true target patients who were correctly identified among total target patients
- False Positive Rate (FPR): % of true control patients incorrectly identified among total control patients
- Specificity: % of those control who will have a negative target result
- F1 Score: is the harmonic mean of precision and recall
- AUC: Area Under the Receiver Operating Characteristic (ROC) Curve. To validate the trade-off between true positive rate and false positive rate [38].

4. Analysis results and discussion

4.1 Substance usage disease trends overview

This section provides an overview of SUD trends for 2019 and 2020 when leveraging the healthcare claims dataset that was discussed in the earlier section of the chapter. The summary includes information on the overall trends, patient demographics, and insights into the COVID-19 diagnosis rates. The first part of the analysis was to review and understand the SUD diagnoses trends as well as COVID-19 infection rates within the SUD population. The focus of the analysis was on the SUD population only to understand changes in trends during the pandemic.

The monthly trends of patients with SUD diagnoses presented that the addiction trends stayed consistent over 2019 and 2020, with the exception of April–May 2020 timeframe. The list of SUD diagnoses is presented in the appendix refers to **Tables 6–9**. At the beginning of the pandemic (April–May 2020), there was a decrease in the number of patients with addiction diagnoses. A two sample t-test that compared the SUD diagnosis counts between April–May 2019 and April–May 2020 revealed that the difference in counts was not significant at either the 5% or 10% significance level. However, the directional decline might have been a result of the state enacted restrictions, including home confinement as well as the inability to hold in-person HCP office visits and elective procedures (**Figure 2**).

The SUD diagnoses trend data also involved analyzing trends by splitting the patient cohort into newly diagnosed patients in the last 12 months as well as previously diagnosed patients within the same timeframe. The analysis presented that the share of newly diagnosed patients vs. previously diagnosed declined slightly between 2019 and 2020, but the difference was not statistically significant. In 2020, newly diagnosed patients accounted for 62% of all patients vs. 66% in 2019. In addition, patients diagnosed with addiction as well as COVID-19 represented 3% of the newly diagnosed patients and 4% of those with already a diagnosis.

Furthermore, several different types of SUD experienced a decline in the number of patients diagnosed at the start of the pandemic. Opioid dependence was the leading addiction type with alcohol dependence following as next most frequently diagnosed SUD (**Figure 3**). The counts of opioid dependence diagnosis were statistically different from the counts for other types of SUD. Statistically significant difference in trends at 5% significance level was also observed between opioid dependence and alcohol dependence, opioid dependence vs. cannabis dependence,

Figure 2.
Addiction monthly patient count trends, 2019–2020.

Figure 3.
Addiction monthly patient count trends, 2019–2020.

sedatives dependence vs. cannabis dependence, and sedatives dependence vs. alcohol use. The addiction diagnosis codes are noted in the appendix. Patients with psychoactive type of addiction represented a higher share within the COVID-19 diagnosed population (19%) as compared to the overall share (3%). Psychoactive SUD is referred to as addiction type with hallucinatory symptoms. The COVID-19 patient distribution for other addictions was very similar to the overall addiction population.

An additional analysis of demographic and geographic attributes as presented in **Table 1** revealed that males presented a higher percentage of the SUD population compared to SUD and COVID-19 population, but the percentage was not statistically significantly different from the percentage of women SUD patients. On the other hand, patients using cannabis appeared younger compared to the rest of the SUD population. This finding was statistically significant based on a two sample t-test (p-value = 0.00, statistically significant at 5%).

Most of both SUD and COVID-19 patients had commercially provided insurance coverage (~70%), while ~30% of patients had a government provided healthcare insurance (p-value = 0.00, statistically significant at 5%). Inhalants and rehabilitation drug addiction represented the highest share of patients with commercial insurance with more than 75%.

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Table 1.
Patient demographic summary (age and gender).

Furthermore, the North East and Midwest regions represented two main geographic areas of the United States with the highest level of patients diagnosed with SUD and covered more than 50% of the total addiction diagnosed patients. The share of patients in these two regions was statistically significantly higher compared to the rest of the US regions (p-value = 0.00, statistically significant at 5%). The West regions on the other hand covered approximately 20% of the addiction diagnosed population.

The SUD treatment pattern analysis revealed that the procedural services, including psychotherapy, recommended to treat SUD patients declined in April and May 2020 and then returned to similar levels before the pandemic and on par with

Figure 4.
Procedural treatment trends, 2019–2020.

Figure 5.
Addiction Rx treatment monthly patient count trends, 2019–2020, by addiction type.

the 2019 trends (**Figure 4**). The decline was statistically significant at the 10% significance level with a p-value = 0.07. The decline might have been related to the imposed country-wide lockdown during the two months on 2020.

On the other hand, the number of patients treated with prescription medications statistically significantly increased between 2019 and 2020 (p-value = 0.00, statistically significant at 5%), even during the pandemic, the trend continued to increase, implying that patients continuously were receiving patient care (**Figure 5**). The drugs names are presented in the appendix. Prescription treatments for drug related addiction had the highest share of the treatments, followed by addiction relapse treatments. The share of drug prescription treatments was statistically different from the other types of therapy, including relapse and alcohol treatments.

4.2 Alcohol consumption overview

This section of the book chapter provides an overview of alcohol consumption trends for 2019 and 2020. For this analysis, alcohol consumption data on per capita, alcohol sales from 19 states (Alaska, Arkansas, Colorado, Connecticut, Delaware, Florida, Illinois, Kansas, Kentucky, Louisiana, Massachusetts, Missouri, North

Figure 6.
Monthly avg. of pure alcohol (gallons of ethanol) across United States.

Dakota, Oregon, Tennessee, Texas, Utah, Virginia, and Wisconsin) by type of alcoholic beverage was leveraged. The limited alcohol consumption information by state was due to the limited data availability at source [22].

The monthly trends of pure alcohol (gallons of ethanol) from 2019 and 2020 in **Figure 6** showed that the trend stayed nearly the same, with a only a directional increase in 2020 [22]. A two sample t-test did not present statistically significant differences between the yearly trends. On the other hand, it was observed that with the increase in COVID-19 cases in the middle of pandemic (June–August 2020), there was an associated increase in the consumption of pure alcohol, as evident from the high Pearson correlation coefficient of 0.87 between the alcohol consumption and COVID-19 diagnosed number of patients. The increase in the alcohol use might have been associated with individuals experiencing hardship due to the prolonged lock-downs, loss of job, and the overall changes in lifestyle as a result of pandemic, and alcohol being perceived as a way for coping with the changing environment.

The trends describing gallons of alcohol per capita for age 14 and older (**Figure 7**) showed a statistically significance increase (p-value = 0.04, statistically significant at 5%) in gallons per capita from mid-May 2020, which might be a result of the COVID-19 pandemic spread. This was also apparent from a strong a Pearson correlation coefficient of 0.91 between the pandemic outbreak as denoted by a volume of patients diagnosed with COVID-19 and gallons of alcohol per capita [22].

In order to understand the alcohol consumption over time, the percentage change in gallons of alcohol per capita from 2017 to 2019 (a 3-year average) to 2020

Figure 7.
Gallons of ethanol per capita age 14 and older (2019 and 2020).

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Figure 8.
Percentage change in gallons of ethanol per capita age 14 and older from 2017 to 2019 (3-year average) to 2020. Note: Limited states shown due to unavailability of the data from the source.

was analyzed (**Figure 8**). Overall, a visible increase in the trend was noticed; however, in May 2020, a statistically significant decline in the percentage in alcohol consumption (p -value = 0.06, statistically significant at 10%) was observed due to the COVID-19 imposed lockdowns and closures of liquor stores. From the month of June onwards, a statistically significant increase in the percentage change (p -value = 0.06, statistically significant at 10%) was noted, which might have been associated with the lockdown restrictions being partially lifted, leading to re-opening of liquor stores and increased purchasing levels [22].

Figure 9 depicts a comparison of selected states’ gallons of alcohol consumption per capita between 2019 and 2020. As noted earlier, only a few selected states were considered for the analysis due to the limited availability of the data at the source. For most of the states, an increase in alcohol (in gallons) per capita is noticeable in 2020. Delaware’s excise tax on liquor of \$3.75 per gallon, lower than 72% of the other 50 states, led to the highest increase in per capita alcohol in 2020. Most of the states experienced an increase in per capita alcohol during the COVID-19 pandemic [22].

The alcohol consumption data was also analyzed for each alcohol type. **Figure 10** presents a yearly consumption comparison between 2019 and 2020 for beer, wine and spirits. It was observed that beer consumption was higher in January and February in 2020 compared to January and February in 2019, but after the COVID-19 pandemic started, the consumption decreased from March onwards until May 2020

Figure 9.
State wise three-year average gallons of ethanol per capita age 14 and older, 2017–2019 and 2020.

Figure 10.
Average beverage consumption breakout by wine, beer and spirit from 2019 and 2020. Note: 2020 data is available only until Sep due to limited availability from the source.

due to lockdowns and limited liquor facilities opened in each state. For wine and spirits, the trend of consumption showed an increase, starting from January 2020 onwards [21]. It was also evident that the increase in volume of beer, spirit, and wine consumption from 2019 to 2020 was statistically significant based on the two sample t-test, which resulted in a p-value < 0.02 for each alcohol type [22].

4.3 Effects of alcohol and substance use during COVID-19

In this section of the book chapter, the effects of alcohol and SUD during the COVID-19 pandemic were analyzed. An ordinary least square linear regression model was used to investigate the correlation between these events. The dataset employed was a combination of the healthcare claims data and the alcohol consumption data, both aggregated at a state and monthly levels for comparison [21, 22].

The results of the ordinary least square regression are presented in **Table 2**. The analysis results showed that sedatives use, alcohol abuse, and beer consumption were the highly significant variables and positively correlated with the COVID-19 pandemic spread. Sedatives like benzodiazepines are often prescribed for anxiety and insomnia, confirming the finding [39]. Furthermore, an increased consumption of alcohol might have led to seeking treatments to manage the signs of frustration, sadness, mental health conditions, and stress [40], caused by the prolonged isolation during the pandemic.

Other parameters like opioid use, cannabis use/abuse were significant as well, but they were negatively correlated with the pandemic spread. These results were consistent with previous research articles, presenting that drug use declined during the pandemic while at the same time patients suffered from withdraws and other symptoms related to fewer substances available for consumption [12–14, 41, 42]. On the other hand, while beer consumption was positively correlated with COVID-19 pandemic trends, the consumption of spirits presented the reversed correlation, which was contrary to the findings of overall alcohol trend increases. The difference in correlation might have been related to the differences in states regulations of the different types of alcohol, which in turn might impact the alcohol type availability for consumption at the state level [43].

The model significance was evident from the F-statistic value of 14.7 with an adjusted R square value of ~74%, which informed that a relatively high proportion of the variations in the data could be explained by the predictor variables.

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Note: Per capita alcohol sales from 19 states (Alaska, Arkansas, Colorado, Connecticut, Delaware, Florida, Illinois, Kansas, Kentucky, Louisiana, Massachusetts, Missouri, North Dakota, Oregon, Tennessee, Texas, Utah, Virginia, and Wisconsin) by type of alcoholic beverage.

Table 2.
Ordinary least square regression analysis results.

4.4 Machine learning: important features leading to addiction

To understand the parameters associated with SUD and identify if the COVID-19 pandemic impacted the addiction diagnosis rate, supervised classification machine learning algorithms, including random forest and XGBoost were performed.

4.4.1 Dataset overview

As a part of the analysis, two distinct patient cohorts: study target and control groups were developed to allow for analysis of the SUD and COVID-19 trends. The distinction between these two groups permitted the machine learning models to learn

the variations in the data and identify the important variables that best distinguished between both groups. The target group was defined by the patients in the data from October 2020 to December 2020, who had at least 2 addiction diagnoses, followed by a treatment after initial diagnosis, and the control group was defined by the patients from October 2019 to December 2019, having two addiction diagnoses, followed by a treatment after initial diagnosis. A sample of ~20,000 records were randomly selected for the modeling exercise based on similar age and gender distribution as in the target group. Two months of historical claims data related to diagnosis, procedures, and pharmacological treatment were pulled from initial diagnosis event along with other demographic data elements like age, gender, income, education, etc. The healthcare claims level data was converted to patient level records, using data pre-processing steps, and a final data structure with ~20,000 records and ~15,000 features was created for machine learning modeling [21].

4.4.2 Feature selection

The data elements used for the study included diagnosis, procedures, and pharmacological treatments along with other demographic features like age, gender, income, education, etc. Since the number of features was ~15,000, the data element dimension needed to be reduced to a more manageable number.

In order to reduce the variables' space and select the top features, the LightGBM and Boruta algorithms were leveraged for the purposes of dimension reduction. LightGBM is a gradient boosting framework, which uses tree-based learning, whereas Boruta is a feature selection algorithm, a wrapper built around RF Classification algorithm. The top features from both the algorithms were selected for the machine learning algorithms development [44].

Table 3 below represents a list of selected features important in the preliminary run of the models. Data elements related to the COVID-19 diagnoses and associated symptoms along with alcohol and nicotine use as well as major depressive disorder were noted as important variables, separating the 2020 and 2019 SUD patient cohorts.

4.4.3 Machine learning models overview

In order to understand the underlying factors for the SUD 2020 and 2019 patient cohorts and investigate if there was an association with the COVID-19 pandemic, the following machine learning models were applied: random forest and XGBoost. Hyper tuning process was also performed to optimize the models. Below a brief methodology overview is presented.

Random forest is a classification algorithm, consisting of many decision trees that use bootstrap aggregation, bagging and feature randomness when building each individual tree. It creates an uncorrelated forest of trees whose prediction is more accurate than that of any individual tree. The model outcome provides estimates of variables important in the classification [45].

XGBoost is a decision-tree-based ensemble machine learning algorithm that uses a gradient boosting framework. XGBoost approaches the process of sequential tree building, using parallelized implementation. Each model run learns from the error of previous models and weak learners. It incorporates the error of weak learners in the ensemble model and re-runs the process. It uses bootstrap aggregating technique, also called as bagging, which implies diving the data into sub samples for each iteration of model training. For prediction purposes, the model chooses majority of the vote from all the learners [46].

Hyper parameter tuning is the optimization process of finding the model parameters to improve the model performance. The objective is to minimize the

Features	Description
DX_Z20.828_ICD_10	CONTACT W AND EXPOSURE TO OTH VIRAL COMMUNICABLE DISEASES
PX_U0003	INFECTIOUS AGENT DETECTION BY NUCLEIC ACID (DNA
PX_87635	IADNA SARS-COV-2 COVID-19 AMPLIFIED PROBE TQ
DX_R51.9_ICD_10	HEADACHE, UNSPECIFIED
DX_U07.1_ICD_10	COVID-19
DX_R74.01_ICD_10	ELEVATION OF LEVELS OF LIVER TRANSAMINASE LEVELS
PX_87426	IAAD IA SEVERE AQTRESPIRSYND CORONAVIRUS
DX_Z11.59_ICD_10	ENCOUNTER FOR SCREENING FOR OTHER VIRAL DISEASES
DX_R51_ICD_10	HEADACHE
PX_U0002	2019-NCOV CORONAVIRUS, SARS-COV-2/2019-NCOV (COV
DX_N18.3_ICD_10	CHRONIC KIDNEY DISEASE, STAGE 3 (MODERATE)
DX_N18.30_ICD_10	CHRONIC KIDNEY DISEASE, STAGE 3 UNSPECIFIED
PX_U0004	2019-NCOV CORONAVIRUS, SARS-COV-2/2019-NCOV (COV
PX_H0020	ALCOHOL AND/OR DRUG SERVICES; METHADONE ADMINIST
PX_80307	DRUG TST PRSMV INSTRMNT CHEM ANALYZERS PR DATE
DX_F17.210_ICD_10	NICOTINE DEPENDENCE, CIGARETTES, UNCOMPLICATED
RX_78340	DISULFIRAM
DX_R45.851_ICD_10	SUICIDAL IDEATIONS
DOC_IM	Internal Medicine
DOC_FM	Family Medicine
DX_F32.9_ICD_10	MAJOR DEPRESSIVE DISORDER, SINGLE EPISODE, UNSPECIFIED
DX_I10_ICD_10	ESSENTIAL (PRIMARY) HYPERTENSION
DX_J06.9_ICD_10	ACUTE UPPER RESPIRATORY INFECTION, UNSPECIFIED
DX_R05_ICD_10	COUGH
RX_78312	NARCAN
RX_09110	NAPROXEN
PX_G0480	DRUG TEST(S), DEFINITIVE, UTILIZING (1) DRUG IDE
PX_G2023	SPECIMEN COLLECTION FOR SEVERE ACUTE RESPIRATORY

Table 3.
Preliminary important data features.

cost function, hence reduce the error caused by the model. It uses gradient descent algorithm, which initially randomly assigns the model parameter to calculate the cost function and later improves it at each step, so that the cost function assumes a minimum value. Mathematically, it takes the derivative of the sum of squared residuals and equates it to 0 to find a point where the function is changing [47].

4.4.4 Machine learning analysis details

The machine learning algorithms were evaluated for the different performance metrics as noted in the earlier section of the book chapter. Initially, the models were overfitting, as they seemed to capture most of the variations from the training data, as well as at the same time captured the noise from the data. This resulted in many negative records misclassified as positive, which might have led to a considerably lower precision value.

As noted in **Table 4**, the baseline models, random forest resulted in AUC of 73% and XGBoost resulted in AUC of 74% with recall of 74.08% and 82.80% respectively. While working with healthcare claims data, a higher ratio of false negative records is perceived as a large problem. For example, predicting a sick patient as

Table 4.
Machine learning model metrics.

healthy, because ideally the patient should have received the treatment on time, may lead to health complications and even potentially death. Thus, it is advised to minimize the number of false negative observations, which will result in a higher recall, depicting an inverse relationship between the two, also called true positive rate or sensitivity. However, the initial baseline models resulted in a comparatively lower recall. To improve the model accuracy, the hyper parameter tuning was executed to find the best model parameters.

In addition, F1 score was defined as follows:

$$2 * (\text{Precision} * \text{Recall}) / (\text{Precision} + \text{Recall}) \tag{3}$$

which is a function of precision and recall and should be maximized such that both precision and recall both are optimal [45–47]. Hyper parameter tuned models not only improved the recall, but also slightly improved the F1 scores for random forest and XGBoost to 69.4% and 69.57% respectively, implying a robust model sensitive to false negative observations.

The machine learning models were retrained, using a few model parameters, including mex=depth, min-samples_split and max_features. In order to obtain the optimal values of model parameters, k fold cross validation with 5 iterations were used in the hyper parameter tuning process [47].

Using the optimal values of the model parameters obtained from hyper parameter tuning, the models showed an improvement in the model performance, which was evident from the model metrics. As shown in **Table 4**, the recall significantly increased for both of the models and also, the F1 scores slightly improved compared to the baseline models. This resulted in a decrease in the false negatives count, which led to an increase in recall.

Figure 11 depicts the final ROC AUC plot, which shows the relationship between the true positive rate and the false positive rate at different probability thresholds. A true positive rate also known as the sensitivity metric, which informs the proportion of positive records that were correctly classified over the total number of positive records. A false positive rate is the proportion of negative records misclassified over total number of negative records [38]. Both random forest and XGBoost resulted in AUC of 75% with recall of 94.7% and 85.6% respectively, which improved from the baseline models.

4.4.5 Machine learning model interpretation

The random forest and XGBoost models identify features, which were a combination of SUD as well as COVID-19 data elements. **Table 5** presents the top

Figure 11.
ROC AUC curve of random forest and XGBoost.

important features. The importance of the features was measured using the ‘gini’ importance metric, which calculated the impurity in the node. The metric measured how each feature decreased the impurity of the split, while making the decision tree in the algorithm and averaging it over all the trees in the forest, resulting in the measure of feature importance [32, 33].

Features like nicotine dependence, alcohol abuse, long term drug therapy, disulfiram [48], methadone [49] were presented as important in explaining the differences in SUD patient cohorts between 2019 and 2020. For example, the value 0.003 of nicotine dependence importance denoted that the impurity reduced in the node by adding the variable, which thus contributed to the model robustness and a higher accuracy level. The effects of pandemic on individual’s lives were not only restricted to patients’ physical health, but also affected their mental health, as noted by the major depressive, anxiety diagnoses, and suicidal tendencies as presented in the top most important healthcare data elements. The unexpected and unwanted change enforced on daily lives, drastically increased the stress levels. Difficulties in management of the changing environment and following preventive measures, such as undergoing lockdowns, fueled the stress levels even more. The economic downturn, leading to unemployment, and low consumer confidence played an imperative role in increasing the stress levels as well. As a result of the prolonged stress and anxiety due to the lockdowns, the consumption of alcohol, smoking, and other nicotine-based products increased [12, 13, 41, 42].

Variable	Description	Importance
DX_Z20.828_ICD_10	CONTACT W AND EXPOSURE TO OTH VIRAL COMMUNICABLE DISEASES	0.356
PX_U0003	INFECTIOUS AGENT DETECTION BY NUCLEIC ACID (DNA	0.075
PX_87635	IADNA SARS-COV-2 COVID-19 AMPLIFIED PROBE TQ	0.074
DX_R51.9_ICD_10	HEADACHE, UNSPECIFIED	0.049
DX_U07.1_ICD_10	COVID-19	0.042
DX_R74.01_ICD_10	ELEVATION OF LEVELS OF LIVER TRANSAMINASE LEVELS	0.035
DX_Z11.59_ICD_10	ENCOUNTER FOR SCREENING FOR OTHER VIRAL DISEASES	0.029
PX_87426	IAAD IA SEVERE AQTRESPIRSYND CORONAVIRUS	0.025
DX_R51_ICD_10	HEADACHE	0.024
DX_N18.3_ICD_10	CHRONIC KIDNEY DISEASE, STAGE 3 (MODERATE)	0.021
DX_Z03.818_ICD_10	ENCNTR FOR OBS FOR SUSP EXPSR TO OTH BIOLG AGENTS RULED OUT	0.019
PX_U0002	2019-NCOV CORONAVIRUS, SARS-COV-2/2019-NCOV (COV	0.018
DX_N18.30_ICD_10	CHRONIC KIDNEY DISEASE, STAGE 3 UNSPECIFIED	0.016
PX_99285	EMERGENCY DEPT VISIT HIGH SEVERITY&THREAT FUNCJ	0.015
DX_R74.0_ICD_10	NONSPEC ELEV OF LEVELS OF TRANSAMNS & LACTIC ACID DEHYDRGNSE	0.014
PX_H0020	ALCOHOL AND/OR DRUG SERVICES; METHADONE ADMINIST	0.013
PX_71046	RADIOLOGIC EXAM CHEST 2 VIEWS	0.011
PX_U0004	2019-NCOV CORONAVIRUS, SARS-COV-2/2019-NCOV (COV	0.010
PX_C9803	HOSPITAL OUTPATIENT CLINIC VISIT SPECIMEN COLLEC	0.010
PX_99443	PHYS/QHP TELEPHONE EVALUATION	0.009
PX_99072	ADDL SUPL MATRL&STAF TM DRG PHE RES-TR NFCT DS	0.008
PX_85025	BLOOD COUNT COMPLETE AUTO&AUTO DIFRNTL WBC	0.007
PX_80307	DRUG TST PRSMV INSTRMNT CHEM ANALYZERS PR DATE	0.006
PX_80053	COMPREHENSIVE METABOLIC PANEL	0.005
PX_G2067	MEDICATION ASSISTED TREATMENT, METHADONE; WEEKLY	0.005
PX_G0378	HOSPITAL OBSERVATION SERVICE, PER HOUR	0.005
PX_93010	ECG ROUTINE ECG W/LEAST 12 LDS I&R ONLY	0.005

DX_F17.210_ICD_10	NICOTINE DEPENDENCE, CIGARETTES, UNCOMPLICATED	0.003
PX_80048	BASIC METABOLIC PANEL CALCIUM TOTAL	0.003
DX_K21.00_ICD_10	GASTRO-ESOPHAGEAL REFLUX DIS WITH ESOPHAGITIS, WITHOUT BLEED	0.003
RX_78340	DISULFIRAM	0.003
PX_93005	ECG ROUTINE ECG W/LEAST 12 LDS TRCG ONLY W/O I&R	0.002
DX_R45.851_ICD_10	SUICIDAL IDEATIONS	0.002
PX_85027	BLOOD COUNT COMPLETE AUTOMATED	0.002
PX_84484	ASSAY OF TROPONIN QUANTITATIVE	0.002
PX_G1004	CLINICAL DECISION SUPPORT MECHANISM NATIONAL DEC	0.002
DX_I10_ICD_10	ESSENTIAL (PRIMARY) HYPERTENSION	0.002
DX_F32.9_ICD_10	MAJOR DEPRESSIVE DISORDER, SINGLE EPISODE, UNSPECIFIED	0.002
PX_36415	COLLECTION VENOUS BLOOD VENIPUNCTURE	0.002
PX_99284	EMERGENCY DEPARTMENT VISIT HIGH/URGENT SEVERITY	0.002
DX_R77.8_ICD_10	OTHER SPECIFIED ABNORMALITIES OF PLASMA PROTEINS	0.002
DX_J06.9_ICD_10	ACUTE UPPER RESPIRATORY INFECTION, UNSPECIFIED	0.001
PX_J2405	INJECTION, ONDANSETRON HYDROCHLORIDE, PER 1 MG	0.001
DX_Z11.3_ICD_10	ENCNTR SCREEN FOR INFECTIONS W SEXL MODE OF TRANSMISS	0.001
DX_R05_ICD_10	COUGH	0.001
RX_78312	NARCAN	0.001
RX_02232	OXYCODONE HCL	0.001
PX_81001	URNLS DIP STICK/TABLET REAGENT AUTO MICROSCOPY	0.001
DX_Z79.899_ICD_10	OTHER LONG TERM (CURRENT) DRUG THERAPY	0.001
DX_M54.5_ICD_10	LOW BACK PAIN	0.001
PX_99223	INITIAL HOSPITAL CARE/DAY 70 MINUTES	0.001
DX_J12.89_ICD_10	OTHER VIRAL PNEUMONIA	0.001
PX_96374	THER PROPH/DX NJX IV PUSH SINGLE/1ST SBST/DRUG	0.001
DX_Z01.812_ICD_10	ENCOUNTER FOR PREPROCEDURAL LABORATORY EXAMINATION	0.001
PX_G0463	HOSPITAL OUTPATIENT CLINIC VISIT FOR ASSESSMENT	0.001
DX_Z23_ICD_10	ENCOUNTER FOR IMMUNIZATION	0.001
RX_09110	NAPROXEN	0.001
PX_80305	DRUG TEST PRSMV READ DIRECT OPTICAL OBS PR DATE	0.001
PX_87389	IAAD IA HIV-1 AG W/HIV-1 & HIV-2 ANTBDY SINGLE	0.001

PX_99232	SBSQ HOSPITAL CARE/DAY 25 MINUTES	0.001
PX_71045	RADIOLOGIC EXAM CHEST SINGLE VIEW	0.001
DX_F41.9_ICD_10	ANXIETY DISORDER, UNSPECIFIED	0.001
DX_E78.5_ICD_10	HYPERLIPIDEMIA, UNSPECIFIED	0.001
PX_83735	ASSAY OF MAGNESIUM	0.001
RX_20200	CLOBAZAM	0.001
PX_70450	CT HEAD/BRAIN W/O CONTRAST MATERIAL	0.001
RX_15142	AZITHROMYCIN	0.001
RX_64310	DOXEPIN HCL	0.001
PX_80061	LIPID PANEL	0.001
PX_99233	SBSQ HOSPITAL CARE/DAY 35 MINUTES	0.001
PX_82565	CREATININE BLOOD	0.001
AGE_70_79	Age 70 – 79	0.001
PX_J7030	INFUSION, NORMAL SALINE SOLUTION , 1000 CC	0.001
PX_99291	CRITICAL CARE ILL/INJURED PATIENT INIT 30-74 MIN	0.001
PX_83690	ASSAY OF LIPASE	0.001
PX_99283	EMERGENCY DEPARTMENT VISIT MODERATE SEVERITY	0.001
DOC_P	PSYCHIATRY	0.001
PX_85610	PROTHROMBIN TIME	0.001
DX_Z01.818_ICD_10	ENCOUNTER FOR OTHER PREPROCEDURAL EXAMINATION	0.001
DX_G89.29_ICD_10	OTHER CHRONIC PAIN	0.001
DX_F41.1_ICD_10	GENERALIZED ANXIETY DISORDER	0.001
PX_94640	PRESSURIZED/NONPRESSURIZED INHALATION TREATMENT	0.001
DX_K21.9_ICD_10	GASTRO-ESOPHAGEAL REFLUX DISEASE WITHOUT ESOPHAGITIS	0.001
PX_G0480	DRUG TEST(S), DEFINITIVE, UTILIZING (1) DRUG IDE	0.001
DX_O99.89_ICD_10	OTH DISEASES AND CONDITIONS COMPL PREG/CHLDBRTH	0.001
PX_86769	ANTB SEVERE AQT RESPIR SYND SARS-COV-2 COVID-19	0.001
DX_D64.9_ICD_10	ANEMIA, UNSPECIFIED	0.001
DX_F10.139_ICD_10	ALCOHOL ABUSE WITH WITHDRAWAL, UNSPECIFIED	0.001
DX_R40.0_ICD_10	SOMNOLENCE	0.001
PX_90832	PSYCHOTHERAPY W/PATIENT 30 MINUTES	0.001
PX_G2023	SPECIMEN COLLECTION FOR SEVERE ACUTE RESPIRATORY	0.001

Table 5.
Top most important healthcare related features.

It was also interesting to see features related to COVID-19 pandemic being noted as important differentiators between the 2019 and 2020 SUD patient cohorts. The features included COVID-19 diagnosis and related symptoms: headache, cough, acute upper respiratory infection, specimen collection for severe acute respiratory condition. Procedures noting HCP in-office and tele-visits along with in-patient hospital or ER visits were also noted as important variables, further highlighting that the amount of care might have increased as a result of SUD, but also due to COVID-19 diagnoses and related symptoms. In addition, medications often used to treat viruses and infections like Azithromycin were also presented as important data elements defining the 2020 SUD patient cohort.

Furthermore, the cohorts differed on the occurrence of the comorbid conditions, such as chronic kidney condition, hypertension, hyper lipidemia, and gastro-esophagus conditions, which might inform a potential impact of a larger alcohol and other substance abuse activities during the pandemic or simply present that the patient profile changed during the pandemic, expanding the definition of the SUD patients group. There were also several data elements identifying SUD treatments such as Narcan, methadone to list a few and procedures related to drug testing, blood panels, and other related treatments, which present an increased rate of addiction testing and treatment between the two periods, confirming earlier findings of increased SUD treatment trends. The analysis also presented differences of the cohorts on a diagnoses for lower back pain and pain relieve medications use.

From the sociodemographic data elements, patients diagnosed with addiction or treated for addiction presented characteristics that can help further define the patient profiles for individuals that were likely for developing SUD during the pandemic. For example, the average age of 42 was observed for the impacted population. Ethnicity of Caucasian and Black/African American was also noted as prevalent. Patients with nicotine dependence, alcohol dependence, opioid use, and cannabis dependence were relatively more prevalent in the states of Florida and Texas. These states presented a relatively higher volume of patients with specific SUD diagnoses compared to other states. The impacted patients presented some college or achieved at least a high school diploma as well as were more likely to be associated with the lower economic status communities, with income level being less than \$30 K annually. The educational and economic levels were noted by other published articles, presenting the economic impact and increased risk for COVID-19 virus within low income population [2].

5. Conclusions and study limitations

This book chapter investigated SUD and the resulting impact from the COVID-19 pandemic on the rate of diagnoses and treatment. Overall, the diagnoses rate of SUD was consistent over time in 2020 compared to 2019 (except for April and May); however, a statistically significant increase in treatment of different addiction types was noted during the pandemic. In 2020, newly diagnosed patients accounted for 62% of all SUD patients compared to 66% in 2019, but the difference was not statistically significant. Furthermore, the changes in procedures performed for addiction testing significantly declined at the beginning of the pandemic and then returned to normal levels in June of 2020, while the SUD treatment significantly increased between 2019 and 2020. In addition, patients diagnosed with addiction as well as COVID-19 represented 3% of the newly diagnosed patients and 4% of those with already a diagnosis. Patients using cannabis were found statistically significantly younger compared to the rest of the SUD population.

In 2020, a noticeable increase in alcohol consumption and drinking behaviors was observed compared to 2019, including an increase in the average gallons consumed by alcohol type: spirits, wine, and beer. Compared to the previous years, a statistically significant positive percentage change in gallons of alcohol per capita from 2017 to 2019 (a 3-year average) to 2020 was observed [22], which could be related to the increased stress levels due to the pandemic spread and prolonged lockdowns [50].

Machine learning analysis of SUD patient cohorts between 2020 and 2019 presented that the patients in the 2020 cohort who were diagnosed with SUD, were also often diagnosed with either COVID-19 or related symptoms, including headache, upper respiratory infection, and cough. Furthermore, it is likely that SUD patients with addiction to drugs and nicotine products were more likely to contract COVID-19, as a result of their weaker immune system due to lower white cells levels in the blood [51, 52]. The analysis also presented the importance of HCP in-office and tele-visits along with in-patient hospital visits that could be related to the increased level of SUD treatment, but also present the severity of COVID-19 related symptoms and the need for treatment.

Moreover, excess alcohol consumption identified as one of the important factors, differentiating between the two SUD patient cohorts could lead to immune deficiency, causing increased susceptibility to certain diseases. Prolonged alcohol abuse may cause disruptions to the digestive system and could result in liver failure. Alcohol use may also affect individual's ability to store adequate amounts of protein and nutrients. Most importantly drugs and alcohol affect white blood cells, which act as the defense system for the body. The weaker defense system can increase the risk of developing life-ending diseases [52].

Finally, based on the machine learning analysis, the SUD patient cohorts differed on occurrence of the comorbid conditions such as chronic kidney condition, hypertension, hyper lipidemia, and gastro-esophagus condition, which might present that the SUD patient profile changed during the pandemic due to the changes in the life style and increased consumption of alcohol and tobacco. Additional investigation should be conducted to further examine the patients' health history and understand the underlying reasons for the differences in the SUD patient cohort characteristics.

5.1 Study limitations

Due to the timing of writing this book chapter, not all data was available for the entire year of 2020 to allow for a comprehensive analysis. Adding the additional data for alcohol consumption, as well as data for recreational drug use by state during the pandemic could enhance the analysis in presenting the SUD population characteristics including their health, mental, and economic state. Furthermore, it might also be helpful to add COVID-19 vaccination data by state in order to understand the effects of vaccinations and COVID-19 variants on general virus trends as well as SUD impacted populations.

Additionally, the healthcare patient level claims data, comprising of prescription, medical, and hospital claims can also observe gaps in the coverage of long-term care institutions, mental health hospitals, correctional facilities, and other institutions with a limited public reporting, and result in a potential bias in the studied population when compared to the entire US population. Furthermore, the COVID-19 related symptoms' diagnoses might also skew the analysis and overestimate the impact of COVID-19 on the SUD population. The statistical results could be

further enhanced and become more robust with the additional data availability and understanding of the diagnosis codes for the COVID-19 related symptoms.

Since the COVID-19 pandemic was a rare event, it became a new topic of interest for analysis. As a result, there was a limited number prior research studies conducted on this topic, which posed a challenge in creating a theoretical foundation for this book chapter's research questions and hypothesis. With little prior research, developing an entire new research typology was challenging.

The scope of the analysis can also be enhanced via adding additional data sources and having a longer timeframe to evaluate the impact of pandemic on addiction and health impact of those impacted by either condition. Furthermore, new set of advanced analytics, including deep learning and natural language processing (NLP) approaches, could be applied to create data driven evidence to confirm newly established hypothesis, research objectives, and results.

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The Alcohol Consumption Dataset is available from the National institute of Alcohol Abuse and Alcoholism [Online]. <https://pubs.niaaa.nih.gov/publications/surveillance-covid-19/COVSALES.htm>

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Conflict of interest

The authors declare no conflict of interest.

Notes/Thanks/Other declarations

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Appendix

(Tables 6–9).

IntechOpen

IntechOpen

F12.99	CANNABIS USE, UNSPECIFIED WITH UNSPECIFIED CANNABIS-INDUCED DISORDER
F14.10	COCAINE ABUSE, UNCOMPLICATED
F14.11	COCAINE ABUSE, IN REMISSION
F14.120	COCAINE ABUSE WITH INTOXICATION, UNCOMPLICATED
F14.121	COCAINE ABUSE WITH INTOXICATION WITH DELIRIUM
F14.122	COCAINE ABUSE WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F14.129	COCAINE ABUSE WITH INTOXICATION, UNSPECIFIED
F14.14	COCAINE ABUSE WITH COCAINE-INDUCED MOOD DISORDER
F14.150	COCAINE ABUSE WITH COCAINE-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F14.151	COCAINE ABUSE WITH COCAINE-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F14.159	COCAINE ABUSE WITH COCAINE-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F14.180	COCAINE ABUSE WITH COCAINE-INDUCED ANXIETY DISORDER
F14.181	COCAINE ABUSE WITH COCAINE-INDUCED SEXUAL DYSFUNCTION
F14.182	COCAINE ABUSE WITH COCAINE-INDUCED SLEEP DISORDER
F14.188	COCAINE ABUSE WITH OTHER COCAINE-INDUCED DISORDER
F14.19	COCAINE ABUSE WITH UNSPECIFIED COCAINE-INDUCED DISORDER
F14.20	COCAINE DEPENDENCE, UNCOMPLICATED
F14.21	COCAINE DEPENDENCE, IN REMISSION
F14.220	COCAINE DEPENDENCE WITH INTOXICATION, UNCOMPLICATED
F14.221	COCAINE DEPENDENCE WITH INTOXICATION DELIRIUM
F14.222	COCAINE DEPENDENCE WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F14.229	COCAINE DEPENDENCE WITH INTOXICATION, UNSPECIFIED
F14.23	COCAINE DEPENDENCE WITH WITHDRAWAL
F14.24	COCAINE DEPENDENCE WITH COCAINE-INDUCED MOOD DISORDER
F14.250	COCAINE DEPENDENCE WITH COCAINE-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F14.251	COCAINE DEPENDENCE WITH COCAINE-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F14.259	COCAINE DEPENDENCE WITH COCAINE-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F14.280	COCAINE DEPENDENCE WITH COCAINE-INDUCED ANXIETY DISORDER
F14.281	COCAINE DEPENDENCE WITH COCAINE-INDUCED SEXUAL DYSFUNCTION
F14.282	COCAINE DEPENDENCE WITH COCAINE-INDUCED SLEEP DISORDER
F14.288	COCAINE DEPENDENCE WITH OTHER COCAINE-INDUCED DISORDER
F14.29	COCAINE DEPENDENCE WITH UNSPECIFIED COCAINE-INDUCED DISORDER
F14.90	COCAINE USE, UNSPECIFIED, UNCOMPLICATED
F14.920	COCAINE USE, UNSPECIFIED WITH INTOXICATION, UNCOMPLICATED
F14.921	COCAINE USE, UNSPECIFIED WITH INTOXICATION DELIRIUM
F14.922	COCAINE USE, UNSPECIFIED WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F14.929	COCAINE USE, UNSPECIFIED WITH INTOXICATION, UNSPECIFIED
F14.94	COCAINE USE, UNSPECIFIED WITH COCAINE-INDUCED MOOD DISORDER
F14.950	COCAINE USE, UNSPECIFIED WITH COCAINE-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS

F14.951	COCAINE USE, UNSPECIFIED WITH COCAINE-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F14.959	COCAINE USE, UNSPECIFIED WITH COCAINE-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F14.980	COCAINE USE, UNSPECIFIED WITH COCAINE-INDUCED ANXIETY DISORDER
F14.981	COCAINE USE, UNSPECIFIED WITH COCAINE-INDUCED SEXUAL DYSFUNCTION
F14.982	COCAINE USE, UNSPECIFIED WITH COCAINE-INDUCED SLEEP DISORDER
F14.988	COCAINE USE, UNSPECIFIED WITH OTHER COCAINE-INDUCED DISORDER
F14.99	COCAINE USE, UNSPECIFIED WITH UNSPECIFIED COCAINE-INDUCED DISORDER
F16.10	HALLUCINOGEN ABUSE, UNCOMPLICATED
F16.11	HALLUCINOGEN ABUSE, IN REMISSION
F16.120	HALLUCINOGEN ABUSE WITH INTOXICATION, UNCOMPLICATED
F16.121	HALLUCINOGEN ABUSE WITH INTOXICATION WITH DELIRIUM
F16.122	HALLUCINOGEN ABUSE WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F16.129	HALLUCINOGEN ABUSE WITH INTOXICATION, UNSPECIFIED
F16.14	HALLUCINOGEN ABUSE WITH HALLUCINOGEN-INDUCED MOOD DISORDER
F16.150	HALLUCINOGEN ABUSE WITH HALLUCINOGEN-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F16.151	HALLUCINOGEN ABUSE WITH HALLUCINOGEN-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F16.159	HALLUCINOGEN ABUSE WITH HALLUCINOGEN-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F16.180	HALLUCINOGEN ABUSE WITH HALLUCINOGEN-INDUCED ANXIETY DISORDER
F16.183	HALLUCINOGEN ABUSE WITH HALLUCINOGEN PERSISTING PERCEPTION DISORDER (FLASHBACKS)
F16.188	HALLUCINOGEN ABUSE WITH OTHER HALLUCINOGEN-INDUCED DISORDER
F16.19	HALLUCINOGEN ABUSE WITH UNSPECIFIED HALLUCINOGEN-INDUCED DISORDER
F16.20	HALLUCINOGEN DEPENDENCE, UNCOMPLICATED
F16.21	HALLUCINOGEN DEPENDENCE, IN REMISSION
F16.220	HALLUCINOGEN DEPENDENCE WITH INTOXICATION, UNCOMPLICATED
F16.221	HALLUCINOGEN DEPENDENCE WITH INTOXICATION WITH DELIRIUM
F16.229	HALLUCINOGEN DEPENDENCE WITH INTOXICATION, UNSPECIFIED
F16.24	HALLUCINOGEN DEPENDENCE WITH HALLUCINOGEN-INDUCED MOOD DISORDER
F16.250	HALLUCINOGEN DEPENDENCE WITH HALLUCINOGEN-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F16.251	HALLUCINOGEN DEPENDENCE WITH HALLUCINOGEN-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F16.259	HALLUCINOGEN DEPENDENCE WITH HALLUCINOGEN-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F16.280	HALLUCINOGEN DEPENDENCE WITH HALLUCINOGEN-INDUCED ANXIETY DISORDER
F16.283	HALLUCINOGEN DEPENDENCE WITH HALLUCINOGEN PERSISTING PERCEPTION DISORDER (FLASHBACKS)
F16.288	HALLUCINOGEN DEPENDENCE WITH OTHER HALLUCINOGEN-INDUCED DISORDER
F16.29	HALLUCINOGEN DEPENDENCE WITH UNSPECIFIED HALLUCINOGEN-INDUCED DISORDER
F16.90	HALLUCINOGEN USE, UNSPECIFIED, UNCOMPLICATED
F16.920	HALLUCINOGEN USE, UNSPECIFIED WITH INTOXICATION, UNCOMPLICATED
F16.921	HALLUCINOGEN USE, UNSPECIFIED WITH INTOXICATION WITH DELIRIUM

F16.929	HALLUCINOGEN USE, UNSPECIFIED WITH INTOXICATION, UNSPECIFIED
F16.94	HALLUCINOGEN USE, UNSPECIFIED WITH HALLUCINOGEN-INDUCED MOOD DISORDER
F16.950	HALLUCINOGEN USE, UNSPECIFIED WITH HALLUCINOGEN-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F16.951	HALLUCINOGEN USE, UNSPECIFIED WITH HALLUCINOGEN-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F16.959	HALLUCINOGEN USE, UNSPECIFIED WITH HALLUCINOGEN-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F16.980	HALLUCINOGEN USE, UNSPECIFIED WITH HALLUCINOGEN-INDUCED ANXIETY DISORDER
F16.983	HALLUCINOGEN USE, UNSPECIFIED WITH HALLUCINOGEN PERSISTING PERCEPTION DISORDER (FLASHBACKS)
F16.988	HALLUCINOGEN USE, UNSPECIFIED WITH OTHER HALLUCINOGEN-INDUCED DISORDER
F16.99	HALLUCINOGEN USE, UNSPECIFIED WITH UNSPECIFIED HALLUCINOGEN-INDUCED DISORDER
F18.10	INHALANT ABUSE, UNCOMPLICATED
F18.11	INHALANT ABUSE, IN REMISSION
F18.120	INHALANT ABUSE WITH INTOXICATION, UNCOMPLICATED
F18.121	INHALANT ABUSE WITH INTOXICATION DELIRIUM
F18.129	INHALANT ABUSE WITH INTOXICATION, UNSPECIFIED
F18.14	INHALANT ABUSE WITH INHALANT-INDUCED MOOD DISORDER
F18.150	INHALANT ABUSE WITH INHALANT-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F18.151	INHALANT ABUSE WITH INHALANT-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F18.159	INHALANT ABUSE WITH INHALANT-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F18.17	INHALANT ABUSE WITH INHALANT-INDUCED DEMENTIA
F18.180	INHALANT ABUSE WITH INHALANT-INDUCED ANXIETY DISORDER
F18.188	INHALANT ABUSE WITH OTHER INHALANT-INDUCED DISORDER
F18.19	INHALANT ABUSE WITH UNSPECIFIED INHALANT-INDUCED DISORDER
F18.20	INHALANT DEPENDENCE, UNCOMPLICATED
F18.21	INHALANT DEPENDENCE, IN REMISSION
F18.220	INHALANT DEPENDENCE WITH INTOXICATION, UNCOMPLICATED
F18.221	INHALANT DEPENDENCE WITH INTOXICATION DELIRIUM
F18.229	INHALANT DEPENDENCE WITH INTOXICATION, UNSPECIFIED
F18.24	INHALANT DEPENDENCE WITH INHALANT-INDUCED MOOD DISORDER
F18.250	INHALANT DEPENDENCE WITH INHALANT-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F18.251	INHALANT DEPENDENCE WITH INHALANT-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F18.259	INHALANT DEPENDENCE WITH INHALANT-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F18.27	INHALANT DEPENDENCE WITH INHALANT-INDUCED DEMENTIA
F18.280	INHALANT DEPENDENCE WITH INHALANT-INDUCED ANXIETY DISORDER
F18.288	INHALANT DEPENDENCE WITH OTHER INHALANT-INDUCED DISORDER
F18.29	INHALANT DEPENDENCE WITH UNSPECIFIED INHALANT-INDUCED DISORDER
F18.90	INHALANT USE, UNSPECIFIED, UNCOMPLICATED
F18.920	INHALANT USE, UNSPECIFIED WITH INTOXICATION, UNCOMPLICATED
F18.921	INHALANT USE, UNSPECIFIED WITH INTOXICATION WITH DELIRIUM

F18.929	INHALANT USE, UNSPECIFIED WITH INTOXICATION, UNSPECIFIED
F18.94	INHALANT USE, UNSPECIFIED WITH INHALANT-INDUCED MOOD DISORDER
F18.950	INHALANT USE, UNSPECIFIED WITH INHALANT-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F18.951	INHALANT USE, UNSPECIFIED WITH INHALANT-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F18.959	INHALANT USE, UNSPECIFIED WITH INHALANT-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F18.97	INHALANT USE, UNSPECIFIED WITH INHALANT-INDUCED PERSISTING DEMENTIA
F18.980	INHALANT USE, UNSPECIFIED WITH INHALANT-INDUCED ANXIETY DISORDER
F18.988	INHALANT USE, UNSPECIFIED WITH OTHER INHALANT-INDUCED DISORDER
F18.99	INHALANT USE, UNSPECIFIED WITH UNSPECIFIED INHALANT-INDUCED DISORDER
F11.10	OPIOID ABUSE, UNCOMPLICATED
F11.11	OPIOID ABUSE, IN REMISSION
F11.120	OPIOID ABUSE WITH INTOXICATION, UNCOMPLICATED
F11.121	OPIOID ABUSE WITH INTOXICATION DELIRIUM
F11.122	OPIOID ABUSE WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F11.129	OPIOID ABUSE WITH INTOXICATION, UNSPECIFIED
F11.14	OPIOID ABUSE WITH OPIOID-INDUCED MOOD DISORDER
F11.150	OPIOID ABUSE WITH OPIOID-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F11.151	OPIOID ABUSE WITH OPIOID-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F11.159	OPIOID ABUSE WITH OPIOID-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F11.181	OPIOID ABUSE WITH OPIOID-INDUCED SEXUAL DYSFUNCTION
F11.182	OPIOID ABUSE WITH OPIOID-INDUCED SLEEP DISORDER
F11.188	OPIOID ABUSE WITH OTHER OPIOID-INDUCED DISORDER
F11.19	OPIOID ABUSE WITH UNSPECIFIED OPIOID-INDUCED DISORDER
F11.20	OPIOID DEPENDENCE, UNCOMPLICATED
F11.21	OPIOID DEPENDENCE, IN REMISSION
F11.220	OPIOID DEPENDENCE WITH INTOXICATION, UNCOMPLICATED
F11.221	OPIOID DEPENDENCE WITH INTOXICATION DELIRIUM
F11.222	OPIOID DEPENDENCE WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F11.229	OPIOID DEPENDENCE WITH INTOXICATION, UNSPECIFIED
F11.23	OPIOID DEPENDENCE WITH WITHDRAWAL
F11.24	OPIOID DEPENDENCE WITH OPIOID-INDUCED MOOD DISORDER
F11.250	OPIOID DEPENDENCE WITH OPIOID-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F11.251	OPIOID DEPENDENCE WITH OPIOID-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F11.259	OPIOID DEPENDENCE WITH OPIOID-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F11.281	OPIOID DEPENDENCE WITH OPIOID-INDUCED SEXUAL DYSFUNCTION
F11.282	OPIOID DEPENDENCE WITH OPIOID-INDUCED SLEEP DISORDER
F11.288	OPIOID DEPENDENCE WITH OTHER OPIOID-INDUCED DISORDER
F11.29	OPIOID DEPENDENCE WITH UNSPECIFIED OPIOID-INDUCED DISORDER
F11.90	OPIOID USE, UNSPECIFIED, UNCOMPLICATED

F11.920	OPIOID USE, UNSPECIFIED WITH INTOXICATION, UNCOMPLICATED
F11.921	OPIOID USE, UNSPECIFIED WITH INTOXICATION DELIRIUM
F11.922	OPIOID USE, UNSPECIFIED WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F11.929	OPIOID USE, UNSPECIFIED WITH INTOXICATION, UNSPECIFIED
F11.93	OPIOID USE, UNSPECIFIED WITH WITHDRAWAL
F11.94	OPIOID USE, UNSPECIFIED WITH OPIOID-INDUCED MOOD DISORDER
F11.950	OPIOID USE, UNSPECIFIED WITH OPIOID-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F11.951	OPIOID USE, UNSPECIFIED WITH OPIOID-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F11.959	OPIOID USE, UNSPECIFIED WITH OPIOID-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F11.981	OPIOID USE, UNSPECIFIED WITH OPIOID-INDUCED SEXUAL DYSFUNCTION
F11.982	OPIOID USE, UNSPECIFIED WITH OPIOID-INDUCED SLEEP DISORDER
F11.988	OPIOID USE, UNSPECIFIED WITH OTHER OPIOID-INDUCED DISORDER
F11.99	OPIOID USE, UNSPECIFIED WITH UNSPECIFIED OPIOID-INDUCED DISORDER
F19.10	OTHER PSYCHOACTIVE SUBSTANCE ABUSE, UNCOMPLICATED
F19.11	OTHER PSYCHOACTIVE SUBSTANCE ABUSE, IN REMISSION
F19.120	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH INTOXICATION, UNCOMPLICATED
F19.121	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH INTOXICATION DELIRIUM
F19.122	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH INTOXICATION WITH PERCEPTUAL DISTURBANCES
F19.129	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH INTOXICATION, UNSPECIFIED
F19.14	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH PSYCHOACTIVE SUBSTANCE-INDUCED MOOD DISORDER
F19.150	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F19.151	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F19.159	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F19.16	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PERSISTING AMNESTIC DISORDER
F19.17	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PERSISTING DEMENTIA
F19.180	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH PSYCHOACTIVE SUBSTANCE-INDUCED ANXIETY DISORDER
F19.181	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH PSYCHOACTIVE SUBSTANCE-INDUCED SEXUAL DYSFUNCTION
F19.182	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH PSYCHOACTIVE SUBSTANCE-INDUCED SLEEP DISORDER
F19.188	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH OTHER PSYCHOACTIVE SUBSTANCE-INDUCED DISORDER
F19.19	OTHER PSYCHOACTIVE SUBSTANCE ABUSE WITH UNSPECIFIED PSYCHOACTIVE SUBSTANCE-INDUCED DISORDER
F19.20	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE, UNCOMPLICATED
F19.21	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE, IN REMISSION
F19.220	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH INTOXICATION, UNCOMPLICATED
F19.221	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH INTOXICATION DELIRIUM
F19.222	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE

F19.229	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH INTOXICATION, UNSPECIFIED
F19.230	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH WITHDRAWAL, UNCOMPLICATED
F19.231	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH WITHDRAWAL DELIRIUM
F19.232	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH WITHDRAWAL WITH PERCEPTUAL DISTURBANCE
F19.239	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH WITHDRAWAL, UNSPECIFIED
F19.24	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH PSYCHOACTIVE SUBSTANCE-INDUCED MOOD DISORDER
F19.250	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F19.251	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F19.259	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F19.26	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PERSISTING AMNESTIC DISORDER
F19.27	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH PSYCHOACTIVE SUBSTANCE-INDUCED PERSISTING DEMENTIA
F19.280	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH PSYCHOACTIVE SUBSTANCE-INDUCED ANXIETY DISORDER
F19.281	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH PSYCHOACTIVE SUBSTANCE-INDUCED SEXUAL DYSFUNCTION
F19.282	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH PSYCHOACTIVE SUBSTANCE-INDUCED SLEEP DISORDER
F19.288	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH OTHER PSYCHOACTIVE SUBSTANCE-INDUCED DISORDER
F19.29	OTHER PSYCHOACTIVE SUBSTANCE DEPENDENCE WITH UNSPECIFIED PSYCHOACTIVE SUBSTANCE-INDUCED DISORDER
F19.90	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED, UNCOMPLICATED
F19.920	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH INTOXICATION, UNCOMPLICATED
F19.921	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH INTOXICATION WITH DELIRIUM
F19.922	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F19.929	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH INTOXICATION, UNSPECIFIED
F19.930	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH WITHDRAWAL, UNCOMPLICATED
F19.931	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH WITHDRAWAL DELIRIUM
F19.932	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH WITHDRAWAL WITH PERCEPTUAL DISTURBANCE
F19.939	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH WITHDRAWAL, UNSPECIFIED
F19.94	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH PSYCHOACTIVE SUBSTANCE-INDUCED MOOD DISORDER
F19.950	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH PSYCHOACTIVE SUBSTANCE-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F19.951	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH PSYCHOACTIVE SUBSTANCE-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F19.959	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH PSYCHOACTIVE SUBSTANCE-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F19.96	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH PSYCHOACTIVE SUBSTANCE-INDUCED PERSISTING AMNESTIC DISORDER
F19.97	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH PSYCHOACTIVE SUBSTANCE-INDUCED PERSISTING DEMENTIA
F19.980	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH PSYCHOACTIVE SUBSTANCE-INDUCED ANXIETY DISORDER
F19.981	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH PSYCHOACTIVE SUBSTANCE-INDUCED SEXUAL DYSFUNCTION

F19.982	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH PSYCHOACTIVE SUBSTANCE-INDUCED SLEEP DISORDER
F19.988	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH OTHER PSYCHOACTIVE SUBSTANCE-INDUCED DISORDER
F19.99	OTHER PSYCHOACTIVE SUBSTANCE USE, UNSPECIFIED WITH UNSPECIFIED PSYCHOACTIVE SUBSTANCE-INDUCED DISORDER
F13.10	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE, UNCOMPLICATED
F13.11	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE, IN REMISSION
F13.120	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH INTOXICATION, UNCOMPLICATED
F13.121	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH INTOXICATION DELIRIUM
F13.129	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH INTOXICATION, UNSPECIFIED
F13.14	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED MOOD DISORDER
F13.150	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F13.151	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F13.159	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F13.180	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED ANXIETY DISORDER
F13.181	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED SEXUAL DYSFUNCTION
F13.182	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED SLEEP DISORDER
F13.188	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH OTHER SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED DISORDER
F13.19	SEDATIVE, HYPNOTIC OR ANXIOLYTIC ABUSE WITH UNSPECIFIED SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED DISORDER
F13.20	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE, UNCOMPLICATED
F13.21	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE, IN REMISSION
F13.220	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH INTOXICATION, UNCOMPLICATED
F13.221	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH INTOXICATION DELIRIUM
F13.229	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH INTOXICATION, UNSPECIFIED
F13.230	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH WITHDRAWAL, UNCOMPLICATED
F13.231	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH WITHDRAWAL DELIRIUM
F13.232	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH WITHDRAWAL WITH PERCEPTUAL DISTURBANCE
F13.239	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH WITHDRAWAL, UNSPECIFIED
F13.24	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED MOOD DISORDER
F13.250	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F13.251	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F13.259	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F13.26	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PERSISTING AMNESTIC DISORDER
F13.27	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PERSISTING DEMENTIA

F13.280	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED ANXIETY DISORDER
F13.281	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED SEXUAL DYSFUNCTION
F13.282	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED SLEEP DISORDER
F13.288	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH OTHER SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED DISORDER
F13.29	SEDATIVE, HYPNOTIC OR ANXIOLYTIC DEPENDENCE WITH UNSPECIFIED SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED DISORDER
F13.90	SEDATIVE, HYPNOTIC, OR ANXIOLYTIC USE, UNSPECIFIED, UNCOMPLICATED
F13.920	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH INTOXICATION, UNCOMPLICATED
F13.921	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH INTOXICATION DELIRIUM
F13.929	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH INTOXICATION, UNSPECIFIED
F13.930	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH WITHDRAWAL, UNCOMPLICATED
F13.931	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH WITHDRAWAL DELIRIUM
F13.932	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH WITHDRAWAL WITH PERCEPTUAL DISTURBANCES
F13.939	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH WITHDRAWAL, UNSPECIFIED
F13.94	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED MOOD DISORDER
F13.950	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F13.951	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F13.959	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F13.96	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PERSISTING AMNESTIC DISORDER
F13.97	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED PERSISTING DEMENTIA
F13.980	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED ANXIETY DISORDER
F13.981	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED SEXUAL DYSFUNCTION
F13.982	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED SLEEP DISORDER
F13.988	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH OTHER SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED DISORDER
F13.99	SEDATIVE, HYPNOTIC OR ANXIOLYTIC USE, UNSPECIFIED WITH UNSPECIFIED SEDATIVE, HYPNOTIC OR ANXIOLYTIC-INDUCED DISORDER
F15.10	OTHER STIMULANT ABUSE, UNCOMPLICATED
F15.11	OTHER STIMULANT ABUSE, IN REMISSION
F15.120	OTHER STIMULANT ABUSE WITH INTOXICATION, UNCOMPLICATED
F15.121	OTHER STIMULANT ABUSE WITH INTOXICATION DELIRIUM
F15.122	OTHER STIMULANT ABUSE WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F15.129	OTHER STIMULANT ABUSE WITH INTOXICATION, UNSPECIFIED
F15.14	OTHER STIMULANT ABUSE WITH STIMULANT-INDUCED MOOD DISORDER
F15.150	OTHER STIMULANT ABUSE WITH STIMULANT-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS

F15.151	OTHER STIMULANT ABUSE WITH STIMULANT-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F15.159	OTHER STIMULANT ABUSE WITH STIMULANT-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F15.180	OTHER STIMULANT ABUSE WITH STIMULANT-INDUCED ANXIETY DISORDER
F15.181	OTHER STIMULANT ABUSE WITH STIMULANT-INDUCED SEXUAL DYSFUNCTION
F15.182	OTHER STIMULANT ABUSE WITH STIMULANT-INDUCED SLEEP DISORDER
F15.188	OTHER STIMULANT ABUSE WITH OTHER STIMULANT-INDUCED DISORDER
F15.19	OTHER STIMULANT ABUSE WITH UNSPECIFIED STIMULANT-INDUCED DISORDER
F15.20	OTHER STIMULANT DEPENDENCE, UNCOMPLICATED
F15.21	OTHER STIMULANT DEPENDENCE, IN REMISSION
F15.220	OTHER STIMULANT DEPENDENCE WITH INTOXICATION, UNCOMPLICATED
F15.221	OTHER STIMULANT DEPENDENCE WITH INTOXICATION DELIRIUM
F15.222	OTHER STIMULANT DEPENDENCE WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F15.229	OTHER STIMULANT DEPENDENCE WITH INTOXICATION, UNSPECIFIED
F15.23	OTHER STIMULANT DEPENDENCE WITH WITHDRAWAL
F15.24	OTHER STIMULANT DEPENDENCE WITH STIMULANT-INDUCED MOOD DISORDER
F15.250	OTHER STIMULANT DEPENDENCE WITH STIMULANT-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F15.251	OTHER STIMULANT DEPENDENCE WITH STIMULANT-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F15.259	OTHER STIMULANT DEPENDENCE WITH STIMULANT-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F15.280	OTHER STIMULANT DEPENDENCE WITH STIMULANT-INDUCED ANXIETY DISORDER
F15.281	OTHER STIMULANT DEPENDENCE WITH STIMULANT-INDUCED SEXUAL DYSFUNCTION
F15.282	OTHER STIMULANT DEPENDENCE WITH STIMULANT-INDUCED SLEEP DISORDER
F15.288	OTHER STIMULANT DEPENDENCE WITH OTHER STIMULANT-INDUCED DISORDER
F15.29	OTHER STIMULANT DEPENDENCE WITH UNSPECIFIED STIMULANT-INDUCED DISORDER
F15.90	OTHER STIMULANT USE, UNSPECIFIED, UNCOMPLICATED
F15.920	OTHER STIMULANT USE, UNSPECIFIED WITH INTOXICATION, UNCOMPLICATED
F15.921	OTHER STIMULANT USE, UNSPECIFIED WITH INTOXICATION DELIRIUM
F15.922	OTHER STIMULANT USE, UNSPECIFIED WITH INTOXICATION WITH PERCEPTUAL DISTURBANCE
F15.929	OTHER STIMULANT USE, UNSPECIFIED WITH INTOXICATION, UNSPECIFIED
F15.93	OTHER STIMULANT USE, UNSPECIFIED WITH WITHDRAWAL
F15.94	OTHER STIMULANT USE, UNSPECIFIED WITH STIMULANT-INDUCED MOOD DISORDER
F15.950	OTHER STIMULANT USE, UNSPECIFIED WITH STIMULANT-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F15.951	OTHER STIMULANT USE, UNSPECIFIED WITH STIMULANT-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F15.959	OTHER STIMULANT USE, UNSPECIFIED WITH STIMULANT-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F15.980	OTHER STIMULANT USE, UNSPECIFIED WITH STIMULANT-INDUCED ANXIETY DISORDER
F15.981	OTHER STIMULANT USE, UNSPECIFIED WITH STIMULANT-INDUCED SEXUAL DYSFUNCTION
F15.982	OTHER STIMULANT USE, UNSPECIFIED WITH STIMULANT-INDUCED SLEEP DISORDER

F15.988	OTHER STIMULANT USE, UNSPECIFIED WITH OTHER STIMULANT-INDUCED DISORDER
F15.99	OTHER STIMULANT USE, UNSPECIFIED WITH UNSPECIFIED STIMULANT-INDUCED DISORDER
Z71.51	DRUG ABUSE COUNSELING AND SURVEILLANCE OF DRUG ABUSER
F10.10	ALCOHOL ABUSE, UNCOMPLICATED
F10.11	ALCOHOL ABUSE, IN REMISSION
F10.120	ALCOHOL ABUSE WITH INTOXICATION, UNCOMPLICATED
F10.121	ALCOHOL ABUSE WITH INTOXICATION DELIRIUM
F10.129	ALCOHOL ABUSE WITH INTOXICATION, UNSPECIFIED
F10.14	ALCOHOL ABUSE WITH ALCOHOL-INDUCED MOOD DISORDER
F10.150	ALCOHOL ABUSE WITH ALCOHOL-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F10.151	ALCOHOL ABUSE WITH ALCOHOL-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F10.159	ALCOHOL ABUSE WITH ALCOHOL-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F10.180	ALCOHOL ABUSE WITH ALCOHOL-INDUCED ANXIETY DISORDER
F10.181	ALCOHOL ABUSE WITH ALCOHOL-INDUCED SEXUAL DYSFUNCTION
F10.182	ALCOHOL ABUSE WITH ALCOHOL-INDUCED SLEEP DISORDER
F10.188	ALCOHOL ABUSE WITH OTHER ALCOHOL-INDUCED DISORDER
F10.19	ALCOHOL ABUSE WITH UNSPECIFIED ALCOHOL-INDUCED DISORDER
F10.20	ALCOHOL DEPENDENCE, UNCOMPLICATED
F10.21	ALCOHOL DEPENDENCE, IN REMISSION
F10.220	ALCOHOL DEPENDENCE WITH INTOXICATION, UNCOMPLICATED
F10.221	ALCOHOL DEPENDENCE WITH INTOXICATION DELIRIUM
F10.229	ALCOHOL DEPENDENCE WITH INTOXICATION, UNSPECIFIED
F10.230	ALCOHOL DEPENDENCE WITH WITHDRAWAL, UNCOMPLICATED
F10.231	ALCOHOL DEPENDENCE WITH WITHDRAWAL DELIRIUM
F10.232	ALCOHOL DEPENDENCE WITH WITHDRAWAL WITH PERCEPTUAL DISTURBANCE
F10.239	ALCOHOL DEPENDENCE WITH WITHDRAWAL, UNSPECIFIED
F10.24	ALCOHOL DEPENDENCE WITH ALCOHOL-INDUCED MOOD DISORDER
F10.250	ALCOHOL DEPENDENCE WITH ALCOHOL-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F10.251	ALCOHOL DEPENDENCE WITH ALCOHOL-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F10.259	ALCOHOL DEPENDENCE WITH ALCOHOL-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F10.26	ALCOHOL DEPENDENCE WITH ALCOHOL-INDUCED PERSISTING AMNESTIC DISORDER
F10.27	ALCOHOL DEPENDENCE WITH ALCOHOL-INDUCED PERSISTING DEMENTIA
F10.280	ALCOHOL DEPENDENCE WITH ALCOHOL-INDUCED ANXIETY DISORDER
F10.281	ALCOHOL DEPENDENCE WITH ALCOHOL-INDUCED SEXUAL DYSFUNCTION
F10.282	ALCOHOL DEPENDENCE WITH ALCOHOL-INDUCED SLEEP DISORDER
F10.288	ALCOHOL DEPENDENCE WITH OTHER ALCOHOL-INDUCED DISORDER
F10.29	ALCOHOL DEPENDENCE WITH UNSPECIFIED ALCOHOL-INDUCED DISORDER
F10.920	ALCOHOL USE, UNSPECIFIED WITH INTOXICATION, UNCOMPLICATED
F10.921	ALCOHOL USE, UNSPECIFIED WITH INTOXICATION DELIRIUM

F10.929	ALCOHOL USE, UNSPECIFIED WITH INTOXICATION, UNSPECIFIED
F10.94	ALCOHOL USE, UNSPECIFIED WITH ALCOHOL-INDUCED MOOD DISORDER
F10.950	ALCOHOL USE, UNSPECIFIED WITH ALCOHOL-INDUCED PSYCHOTIC DISORDER WITH DELUSIONS
F10.951	ALCOHOL USE, UNSPECIFIED WITH ALCOHOL-INDUCED PSYCHOTIC DISORDER WITH HALLUCINATIONS
F10.959	ALCOHOL USE, UNSPECIFIED WITH ALCOHOL-INDUCED PSYCHOTIC DISORDER, UNSPECIFIED
F10.96	ALCOHOL USE, UNSPECIFIED WITH ALCOHOL-INDUCED PERSISTING AMNESTIC DISORDER
F10.97	ALCOHOL USE, UNSPECIFIED WITH ALCOHOL-INDUCED PERSISTING DEMENTIA
F10.980	ALCOHOL USE, UNSPECIFIED WITH ALCOHOL-INDUCED ANXIETY DISORDER
F10.981	ALCOHOL USE, UNSPECIFIED WITH ALCOHOL-INDUCED SEXUAL DYSFUNCTION
F10.982	ALCOHOL USE, UNSPECIFIED WITH ALCOHOL-INDUCED SLEEP DISORDER
F10.988	ALCOHOL USE, UNSPECIFIED WITH OTHER ALCOHOL-INDUCED DISORDER
F10.99	ALCOHOL USE, UNSPECIFIED WITH UNSPECIFIED ALCOHOL-INDUCED DISORDER
G62.1	ALCOHOLIC POLYNEUROPATHY
G72.1	ALCOHOLIC MYOPATHY
I42.6	ALCOHOLIC CARDIOMYOPATHY
K29.20	ALCOHOLIC GASTRITIS WITHOUT BLEEDING
K29.21	ALCOHOLIC GASTRITIS WITH BLEEDING
K70.0	ALCOHOLIC FATTY LIVER
K70.10	ALCOHOLIC HEPATITIS WITHOUT ASCITES
K70.11	ALCOHOLIC HEPATITIS WITH ASCITES
K70.2	ALCOHOLIC FIBROSIS AND SCLEROSIS OF LIVER
K70.30	ALCOHOLIC CIRRHOSIS OF LIVER WITHOUT ASCITES
K70.31	ALCOHOLIC CIRRHOSIS OF LIVER WITH ASCITES
K70.40	ALCOHOLIC HEPATIC FAILURE WITHOUT COMA
K70.41	ALCOHOLIC HEPATIC FAILURE WITH COMA
K70.9	ALCOHOLIC LIVER DISEASE, UNSPECIFIED

Table 6.
Substance abuse disorder diagnosis codes.

PRCDR_CDE	PRCDR_DESC
H0001	ALCOHOL AND/OR DRUG ASSESSMENT
H0002	BEHAVIORAL HEALTH SCREENING TO DETERMINE ELIGIBI
H0003	ALCOHOL AND/OR DRUG SCREENING; LABORATORY ANALYS
H0005	ALCOHOL AND/OR DRUG SERVICES; GROUP COUNSELING B
H0006	ALCOHOL AND/OR DRUG SERVICES; CASE MANAGEMENT
H0007	ALCOHOL AND/OR DRUG SERVICES; CRISIS INTERVENTIO
H0008	ALCOHOL AND/OR DRUG SERVICES; SUB-ACUTE DETOXIFI
H0009	ALCOHOL AND/OR DRUG SERVICES; ACUTE DETOXIFICATI
H0010	ALCOHOL AND/OR DRUG SERVICES; SUB-ACUTE DETOXIFI
H0011	ALCOHOL AND/OR DRUG SERVICES; ACUTE DETOXIFICATI
H0012	ALCOHOL AND/OR DRUG SERVICES; SUB-ACUTE DETOXIFI
H0013	ALCOHOL AND/OR DRUG SERVICES; ACUTE DETOXIFICATI
H0014	ALCOHOL AND/OR DRUG SERVICES; AMBULATORY DETOXIF
H0015	ALCOHOL AND/OR DRUG SERVICES; INTENSIVE OUTPATIE
H0016	ALCOHOL AND/OR DRUG SERVICES; MEDICAL/SOMATIC (M
H0020	ALCOHOL AND/OR DRUG SERVICES; METHADONE ADMINIST
H0021	ALCOHOL AND/OR DRUG TRAINING SERVICE (FOR STAFF
H0022	ALCOHOL AND/OR DRUG INTERVENTION SERVICE (PLANNE
H0026	ALCOHOL AND/OR DRUG PREVENTION PROCESS SERVICE,
H0027	ALCOHOL AND/OR DRUG PREVENTION ENVIRONMENTAL SER
H0028	ALCOHOL AND/OR DRUG PREVENTION PROBLEM IDENTIFIC
H0029	ALCOHOL AND/OR DRUG PREVENTION ALTERNATIVES SERV
H0047	ALCOHOL AND/OR OTHER DRUG ABUSE SERVICES, NOT OT
H0048	ALCOHOL AND/OR OTHER DRUG TESTING: COLLECTION AN
H0049	ALCOHOL AND/OR DRUG SCREENING
H0050	ALCOHOL AND/OR DRUG SERVICES, BRIEF INTERVENTION
99408	ALCOHOL/SUBSTANCE SCREEN & INTERVEN 15-30 MIN
99409	ALCOHOL/SUBSTANCE SCREEN & INTERVENTION >30 MIN
H0049	ALCOHOL AND/OR DRUG SCREENING
H0050	ALCOHOL AND/OR DRUG SERVICES, BRIEF INTERVENTION

Table 7.
Substance abuse disorder procedure codes.

IntechOpen

IntechOpen

BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	435980058001
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	435980058030
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	477810035603
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	524270069403
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	524270069411
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	003780876716
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	003780876793
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	007810723806
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	007810723864
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	435980058201
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	435980058230
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	477810035703
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	524270069803
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	524270069811
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	000540018913
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	000930572156
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	002280315503
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	002280315567
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	002280315573
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	004060192403
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	004060802003
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	422910017530
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	502680014511
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	502680014515
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	503830028793
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	545690640800
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	604290058730
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	604290058733
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	621750045832
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	627560097083
BUPRENORPHINE -NALOXONE	BUPRENORPHINE HCL/NALOXONE HCL	651620041503
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960121201
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960121203
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960120201
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960120203
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960128302
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	165900066630
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	499990039507
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	499990039515
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	499990039530
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	529590074930
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	545690549600

SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	548680575000
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	636290402801
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	638740108503
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	680710151003
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	682580299903
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960120401
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960120403
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SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960120803
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	545690639900
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	557000014730
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960130601
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	124960130602
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SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	353560000430
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	430630018407
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	430630018430
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SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	548680570700
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	548680570701
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	548680570702
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	548680570703
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	548680570704
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	550450378403
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	636290403401
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SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	636290403403
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	638740108403
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	663360001630
SUBOXONE	BUPRENORPHINE HCL/NALOXONE HCL	680710138003
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ZUBSOLV	BUPRENORPHINE HCL/NALOXONE HCL	541230091430
ZUBSOLV	BUPRENORPHINE HCL/NALOXONE HCL	541230011430
ZUBSOLV	BUPRENORPHINE HCL/NALOXONE HCL	541230092930
ZUBSOLV	BUPRENORPHINE HCL/NALOXONE HCL	541230095730
ZUBSOLV	BUPRENORPHINE HCL/NALOXONE HCL	541230098630
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PROBUPHINE	BUPRENORPHINE HCL	524400010014
PROBUPHINE	BUPRENORPHINE HCL	582840010014
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SUBLOCADE	BUPRENORPHINE	124960010005
SUBLOCADE	BUPRENORPHINE	124960030001
SUBLOCADE	BUPRENORPHINE	124960030005
SUBUTEX	BUPRENORPHINE HCL	124960127802
SUBUTEX	BUPRENORPHINE HCL	499990063830
SUBUTEX	BUPRENORPHINE HCL	124960131002
SUBUTEX	BUPRENORPHINE HCL	499990063930
SUBUTEX	BUPRENORPHINE HCL	638740117303
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DOLOPHINE HCL	METHADONE HYDROCHLORIDE	000020106404

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METHADONE HCL	METHADONE HCL	632750910004

METHADONE HCL	METHADONE HCL	632750910005
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METHADONE HCL	METHADONE HCL	003780327201
METHADONE HCL	METHADONE HCL	004060577101
METHADONE HCL	METHADONE HCL	004060577123
METHADONE HCL	METHADONE HCL	004060577162
METHADONE HCL	METHADONE HCL	009040653060
METHADONE HCL	METHADONE HCL	009040653061
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METHADONE HCL	METHADONE HCL	105440037860
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METHADONE HCL	METHADONE HCL	165900067045
METHADONE HCL	METHADONE HCL	165900067060
METHADONE HCL	METHADONE HCL	165900067071
METHADONE HCL	METHADONE HCL	165900067072
METHADONE HCL	METHADONE HCL	165900067082
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METHADONE HCL	METHADONE HCL	165900067090
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METHADONE HCL	METHADONE HCL	234900587709
METHADONE HCL	METHADONE HCL	317220094701
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METHADONE HCL	METHADONE HCL	353560083460
METHADONE HCL	METHADONE HCL	353560083490
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METHADONE HCL	METHADONE HCL	499990083901

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METHADONE HCL	METHADONE HCL	548680494802
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METHADONE HCL	METHADONE HCL	552890081490
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METHADONE HCL	METHADONE HCL	552890081499
METHADONE HCL	METHADONE HCL	558870020060
METHADONE HCL	METHADONE HCL	558870020082
METHADONE HCL	METHADONE HCL	558870020090
METHADONE HCL	METHADONE HCL	578660707001
METHADONE HCL	METHADONE HCL	578660707002
METHADONE HCL	METHADONE HCL	578660707003
METHADONE HCL	METHADONE HCL	578660707006
METHADONE HCL	METHADONE HCL	636290377101
METHADONE HCL	METHADONE HCL	636290377102
METHADONE HCL	METHADONE HCL	636290377103
METHADONE HCL	METHADONE HCL	636290377104
METHADONE HCL	METHADONE HCL	636290377105
METHADONE HCL	METHADONE HCL	636290377106
METHADONE HCL	METHADONE HCL	637390000610
METHADONE HCL	METHADONE HCL	663360017130
METHADONE HCL	METHADONE HCL	663360017142
METHADONE HCL	METHADONE HCL	663360017156
METHADONE HCL	METHADONE HCL	663360017160
METHADONE HCL	METHADONE HCL	663360017162
METHADONE HCL	METHADONE HCL	663360017190
METHADONE HCL	METHADONE HCL	663360017194

METHADONE HCL	METHADONE HCL	663360017198
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METHADONE HCL	METHADONE HCL	680840073801
METHADONE HCL	METHADONE HCL	680840073811
METHADONE HCL	METHADONE HCL	684620080101
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METHADONE HCL	METHADONE HCL	000540854916
METHADONE HCL	METHADONE HCL	666890071216
METHADONE HCL	METHADONE HCL	242000028363
METHADONE HCL	METHADONE HCL	000540039168
METHADONE HCL	METHADONE HCL	000540039268
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METHADONE HCL	METHADONE HCL	615530014940
METHADONE HCL	METHADONE HCL	615530014978
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METHADONE HCL	METHADONE HCL	665910081551
METHADONE HCL	METHADONE HCL	674570021720
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METHADONE HCL	METHADONE HCL	234900779803
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METHADONE HCL	METHADONE HCL	558870013460
METHADONE HCL	METHADONE HCL	558870013490
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METHADONE HCL	METHADONE HCL	680840097733
METHADONE HCL	METHADONE HCL	000540355563
METHADONE HCL	METHADONE HCL	000540457025
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METHADONE HCL	METHADONE HCL	004060575523

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METHADONE HCL	METHADONE HCL	165900068945
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METHADONE HCL	METHADONE HCL	234900587802
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METHADONE HCL	METHADONE HCL	430630022293
METHADONE HCL	METHADONE HCL	430630022298
METHADONE HCL	METHADONE HCL	499990096330
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METHADONE HCL	METHADONE HCL	499990096390
METHADONE HCL	METHADONE HCL	529590043530
METHADONE HCL	METHADONE HCL	548680570100
METHADONE HCL	METHADONE HCL	548680570101
METHADONE HCL	METHADONE HCL	548680570102
METHADONE HCL	METHADONE HCL	548680570103
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METHADONE HCL	METHADONE HCL	606870021411
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METHADONE HCL	METHADONE HCL	663360017030
METHADONE HCL	METHADONE HCL	663360017062
METHADONE HCL	METHADONE HCL	663360017090

METHADONE HCL	METHADONE HCL	663360017094
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METHADONE HCL	METHADONE HCL	242000028149
METHADONE HCL	METHADONE HCL	000540854816
METHADONE HCL	METHADONE HCL	666890071116
METHADONE HCL-0.9% NACL	METHADONE HCL IN 0.9 % NACL	242000027503
METHADONE HCL-0.9% NACL	METHADONE IN 0.9 % SOD.CHLORID	615530012078
METHADONE HCL-0.9% NACL	METHADONE IN 0.9 % SOD.CHLORID	615530013490
METHADONE HYDROCHLORIDE	METHADONE HCL	004060254001
METHADONE INTENSOL	METHADONE HCL	000540355344
METHADOSE	METHADONE HCL	004060345434
METHADOSE	METHADONE HCL	499990084030
METHADOSE	METHADONE HCL	499990084060
METHADOSE	METHADONE HCL	548680285401
METHADOSE	METHADONE HCL	548680285402
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METHADOSE	METHADONE HCL	578660318802
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METHADOSE	METHADONE HCL	606870020933
METHADOSE	METHADONE HCL	004060697434
METHADOSE	METHADONE HCL	548680440800
METHADOSE	METHADONE HCL	548680440801
DEPADE	NALTREXONE HCL	004060009201
DEPADE	NALTREXONE HCL	004060009203
NALTREXONE HCL	NALTREXONE HCL	001850003901
NALTREXONE HCL	NALTREXONE HCL	004060117001
NALTREXONE HCL	NALTREXONE HCL	004060117003
NALTREXONE HCL	NALTREXONE HCL	005550090201
NALTREXONE HCL	NALTREXONE HCL	005550090202
NALTREXONE HCL	NALTREXONE HCL	167290008101
NALTREXONE HCL	NALTREXONE HCL	167290008110
NALTREXONE HCL	NALTREXONE HCL	422910063230

NALTREXONE HCL	NALTREXONE HCL	430630059115
NALTREXONE HCL	NALTREXONE HCL	473350032683
NALTREXONE HCL	NALTREXONE HCL	473350032688
NALTREXONE HCL	NALTREXONE HCL	500900286600
NALTREXONE HCL	NALTREXONE HCL	504360010501
NALTREXONE HCL	NALTREXONE HCL	512240020630
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NALTREXONE HCL	NALTREXONE HCL	548680557400
NALTREXONE HCL	NALTREXONE HCL	636290104601
NALTREXONE HCL	NALTREXONE HCL	636290104701
NALTREXONE HCL	NALTREXONE HCL	680840029111
NALTREXONE HCL	NALTREXONE HCL	680840029121
NALTREXONE HCL	NALTREXONE HCL	680940085362
NALTREXONE HYDROCHLORIDE	NALTREXONE HCL	001850003930
NALTREXONE HYDROCHLORIDE	NALTREXONE HCL	521520010502
NALTREXONE HYDROCHLORIDE	NALTREXONE HCL	521520010504
NALTREXONE HYDROCHLORIDE	NALTREXONE HCL	521520010530
NALTREXONE HYDROCHLORIDE	NALTREXONE HCL	656940010003
NALTREXONE HYDROCHLORIDE	NALTREXONE HCL	656940010010
NALTREXONE HYDROCHLORIDE	NALTREXONE HCL	681150068030
REVIA	NALTREXONE HCL	000560001122
REVIA	NALTREXONE HCL	000560001130
REVIA	NALTREXONE HCL	000560001170
REVIA	NALTREXONE HCL	000560001176
REVIA	NALTREXONE HCL	000560007950
REVIA	NALTREXONE HCL	000560008050
REVIA	NALTREXONE HCL	512850027501
REVIA	NALTREXONE HCL	512850027502
VIVITROL	NALTREXONE MICROSPHERES	634590030042
VIVITROL	NALTREXONE MICROSPHERES	657570030001
ANTABUSE	DISULFIRAM	000460080981
ANTABUSE	DISULFIRAM	512850052302
ANTABUSE	DISULFIRAM	545690179000
ANTABUSE	DISULFIRAM	545690179001
ANTABUSE	DISULFIRAM	545690179002
ANTABUSE	DISULFIRAM	548680503400
ANTABUSE	DISULFIRAM	548680503401
ANTABUSE	DISULFIRAM	548680503402
ANTABUSE	DISULFIRAM	654730070601
ANTABUSE	DISULFIRAM	000460081050

ANTABUSE	DISULFIRAM	000460081091
ANTABUSE	DISULFIRAM	512850052402
ANTABUSE	DISULFIRAM	654730070701
DISULFIRAM	DISULFIRAM	387790197102
DISULFIRAM	DISULFIRAM	387790197105
DISULFIRAM	DISULFIRAM	387790197108
DISULFIRAM	DISULFIRAM	387790197109
DISULFIRAM	DISULFIRAM	494520264501
DISULFIRAM	DISULFIRAM	515520109505
DISULFIRAM	DISULFIRAM	519270312100
DISULFIRAM	DISULFIRAM	000540035613
DISULFIRAM	DISULFIRAM	000540035625
DISULFIRAM	DISULFIRAM	000930503501
DISULFIRAM	DISULFIRAM	001500118060
DISULFIRAM	DISULFIRAM	001570066301
DISULFIRAM	DISULFIRAM	001820053201
DISULFIRAM	DISULFIRAM	001820053210
DISULFIRAM	DISULFIRAM	003020231001
DISULFIRAM	DISULFIRAM	003040080101
DISULFIRAM	DISULFIRAM	003490846701
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DISULFIRAM	DISULFIRAM	003780414001
DISULFIRAM	DISULFIRAM	004050436301
DISULFIRAM	DISULFIRAM	005360376701
DISULFIRAM	DISULFIRAM	005370600401
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DISULFIRAM	DISULFIRAM	005910537601
DISULFIRAM	DISULFIRAM	005910537604
DISULFIRAM	DISULFIRAM	006030343121
DISULFIRAM	DISULFIRAM	006030343321
DISULFIRAM	DISULFIRAM	006770100101
DISULFIRAM	DISULFIRAM	007190132010
DISULFIRAM	DISULFIRAM	007190132013
DISULFIRAM	DISULFIRAM	007790037825
DISULFIRAM	DISULFIRAM	007810106001
DISULFIRAM	DISULFIRAM	008140262514
DISULFIRAM	DISULFIRAM	008140262708
DISULFIRAM	DISULFIRAM	008140262714
DISULFIRAM	DISULFIRAM	008390128606
DISULFIRAM	DISULFIRAM	008390128616
DISULFIRAM	DISULFIRAM	009040118060
DISULFIRAM	DISULFIRAM	009040118061

DISULFIRAM	DISULFIRAM	170220390302
DISULFIRAM	DISULFIRAM	354700012801
DISULFIRAM	DISULFIRAM	472020247201
DISULFIRAM	DISULFIRAM	477810060730
DISULFIRAM	DISULFIRAM	496480080101
DISULFIRAM	DISULFIRAM	497270090302
DISULFIRAM	DISULFIRAM	498840015301
DISULFIRAM	DISULFIRAM	498840015305
DISULFIRAM	DISULFIRAM	501110033101
DISULFIRAM	DISULFIRAM	501110033103
DISULFIRAM	DISULFIRAM	516550023224
DISULFIRAM	DISULFIRAM	517280053801
DISULFIRAM	DISULFIRAM	524460017721
DISULFIRAM	DISULFIRAM	584690376730
DISULFIRAM	DISULFIRAM	604290019601
DISULFIRAM	DISULFIRAM	604290019630
DISULFIRAM	DISULFIRAM	649800017101
DISULFIRAM	DISULFIRAM	649800017103
DISULFIRAM	DISULFIRAM	000540035713
DISULFIRAM	DISULFIRAM	000540035725
DISULFIRAM	DISULFIRAM	000930503601
DISULFIRAM	DISULFIRAM	001500118151
DISULFIRAM	DISULFIRAM	001820053301
DISULFIRAM	DISULFIRAM	001820053305
DISULFIRAM	DISULFIRAM	003040080250
DISULFIRAM	DISULFIRAM	003490846850
DISULFIRAM	DISULFIRAM	003640033750
DISULFIRAM	DISULFIRAM	003780414101
DISULFIRAM	DISULFIRAM	005360376805
DISULFIRAM	DISULFIRAM	005360376806
DISULFIRAM	DISULFIRAM	005370600505
DISULFIRAM	DISULFIRAM	005370600550
DISULFIRAM	DISULFIRAM	005800157501
DISULFIRAM	DISULFIRAM	005910536800
DISULFIRAM	DISULFIRAM	005910536801
DISULFIRAM	DISULFIRAM	005910536803
DISULFIRAM	DISULFIRAM	006030343221
DISULFIRAM	DISULFIRAM	007190132110
DISULFIRAM	DISULFIRAM	007190132112
DISULFIRAM	DISULFIRAM	007790037925
DISULFIRAM	DISULFIRAM	007810107001
DISULFIRAM	DISULFIRAM	007810107050

DISULFIRAM	DISULFIRAM	008390128706
DISULFIRAM	DISULFIRAM	008390128716
DISULFIRAM	DISULFIRAM	009040118151
DISULFIRAM	DISULFIRAM	009040118160
DISULFIRAM	DISULFIRAM	472020248501
DISULFIRAM	DISULFIRAM	496480080250
DISULFIRAM	DISULFIRAM	497270090402
DISULFIRAM	DISULFIRAM	498840015401
DISULFIRAM	DISULFIRAM	498840015403
DISULFIRAM	DISULFIRAM	498840015405
DISULFIRAM	DISULFIRAM	501110033201
DISULFIRAM	DISULFIRAM	501110033202
DISULFIRAM	DISULFIRAM	501110033203
DISULFIRAM	DISULFIRAM	517280053901
DISULFIRAM	DISULFIRAM	524460017821
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DISULFIRAM	DISULFIRAM	649800017201
DISULFIRAM	DISULFIRAM	649800017203
ACAMPROSATE CALCIUM	ACAMPROSATE CALCIUM	000930535286
ACAMPROSATE CALCIUM	ACAMPROSATE CALCIUM	002580400060
ACAMPROSATE CALCIUM	ACAMPROSATE CALCIUM	003780633380
ACAMPROSATE CALCIUM	ACAMPROSATE CALCIUM	101350063632
ACAMPROSATE CALCIUM	ACAMPROSATE CALCIUM	422910010418
ACAMPROSATE CALCIUM	ACAMPROSATE CALCIUM	510790024101
ACAMPROSATE CALCIUM	ACAMPROSATE CALCIUM	510790024106
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ACAMPROSATE CALCIUM	ACAMPROSATE CALCIUM	683820056928
ACAMPROSATE CALCIUM	ACAMPROSATE CALCIUM	684620043518
CAMPRAL	ACAMPROSATE CALCIUM	004560333001
CAMPRAL	ACAMPROSATE CALCIUM	004560333060
CAMPRAL	ACAMPROSATE CALCIUM	004560333063
CAMPRAL	ACAMPROSATE CALCIUM	545690576700
CAMPRAL	ACAMPROSATE CALCIUM	548680529300

Table 8.
Substance abuse disorder treatment codes.

Code Name	Code
Confirmed Diagnoses of COVID 19	U07.1
Personal history of COVID-19	Z86.16

Table 9.
COVID-19 diagnoses codes.

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